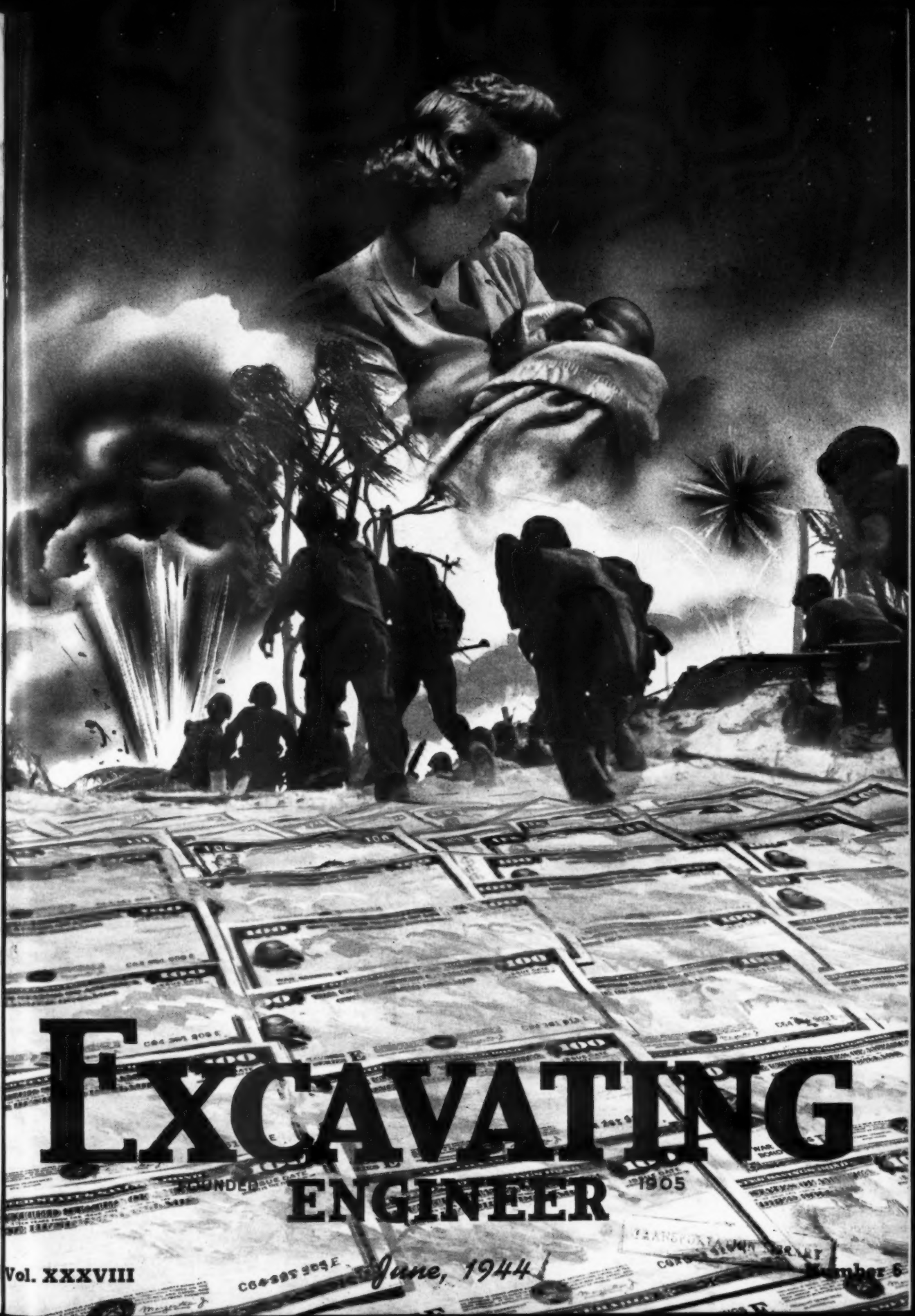


EXCAVATING ENGINEER

FOUNDED AUG. 1905

Vol. XXXVIII June, 1944 Number 6

Stripping on the Mesabi Range in 1943 was 37% greater than in 1942, and ore shipments stayed at record levels too. The credit belongs largely to the men of the Range; their skill, experience and hard work made the record performance possible. Credit belongs also to the equipment on the job. Ability to deliver record output, over long periods, with minimum maintenance requirements has long been claimed for Bucyrus-Erie excavators. We're proud that the wartime performance of Bucyrus-Eries on the Range, in the coal fields, and all over the world proves that claim.

Post-war Bucyrus-Eries, like their predecessors, will give you the most in performance for each dollar of your investment. "Years ahead", these excavators will have the reserve capacity that will let the men of your organization make the most of their skill, experience and hard work.

V-50C

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

1894-1944

Pioneers for 50 Years

For half a century, The Cleveland Pneumatic Tool Company has devoted itself to serving many major industries.* Skilled technicians and experienced engineers within our organization have pioneered and perfected many products for each of these fields. Thus initiative and resourcefulness have enabled us to keep abreast of this country's remarkable industrial progress . . . We are commemorating our golden anniversary by continuing to put all our talents and energies in the fight to preserve the American way of life. We are proud to have grown with our nation for 50 years, and look forward to serving in the great future that lies ahead.

Buy U. S. War Bonds and Stamps

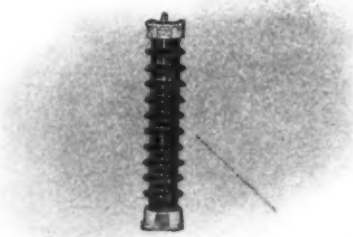
**CLECO Pneumatic Tools speed production in metal-working plants. AEROLS (the shock absorbing landing gear used so universally on aircraft) insure safe, smooth landings and take-offs. CLEVELAND Rock Drills are widely used in the mining and contracting fields. CLE-AIR Shock Absorbers protect buses, trucks and trailers from road shocks.*

THE CLEVELAND PNEUMATIC TOOL COMPANY
AND SUBSIDIARIES
THE CLEVELAND ROCK DRILL DIVISION CLEVELAND PNEUMATIC AEROL, INC.
CLEVELAND PNEUMATIC TOOL COMPANY OF CANADA, LTD.

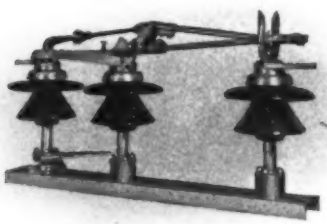
PLAN FOR RELIABLE, SAFE

Power Distribution

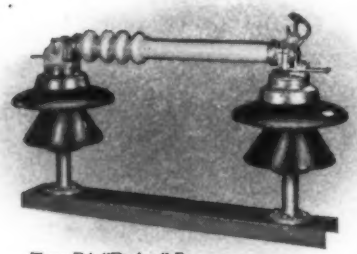
IN OPEN-PIT MINES AND QUARRIES



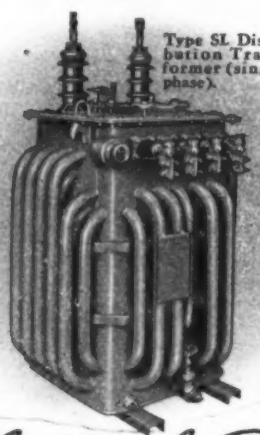
Type LV Lightning Arrester



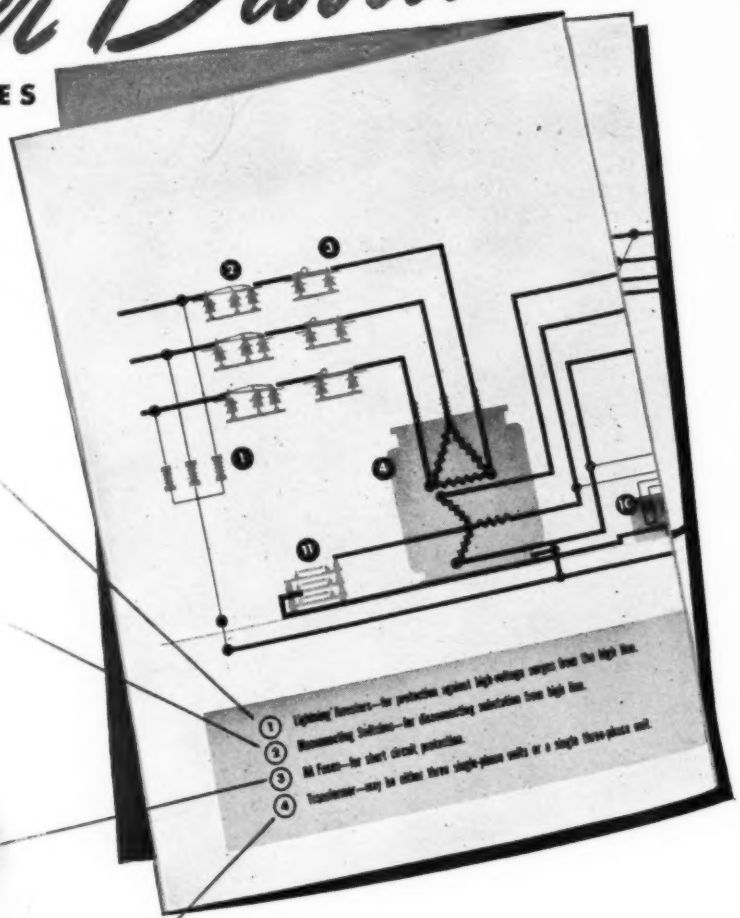
Type KA Disconnecting Switch



Type BA "De-ion" Fuse



Type SL Distribution Transformer (single-phase).



A properly engineered electric power distribution system costs little more than one which is hazardous and unreliable. The reward is increased production—and the safeguarding of your employees' lives.

You owe it to yourself to check your present system for the all-too-common sources of trouble. Probably you will find that a small investment in one or two simple protective devices is all that is needed.

Westinghouse manufactures every type of equipment needed for a complete modern open-pit distribution system. How this equipment can be adapted to your present system to provide adequate protection is shown in a new book, B-3282, just issued. Typical of the many explanatory illustrations it contains, is the sample page shown above. To get your free copy write Westinghouse Electric & Manufacturing Company, Dept. 7-N, East Pittsburgh, Pennsylvania. J-94609

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Electrical Equipment for the Mining Industry

EXCAVATING ENGINEER

FOUNDED 1905

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"The works that are built to lighten the burdens of man and to add to his comforts and pleasures in time of peace serve well in time of war."

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Published Monthly by
THE EXCAVATING ENGINEER PUBLISHING COMPANY
South Milwaukee, Wisconsin, U. S. A.

F. O. WYSE, Publisher — J. D. GRACE, Associate Editor
D. B. REED, JR., Managing Editor — E. W. ARNDT, Art Editor
E. M. HEUSTON, Sales Manager

CCA Member Controlled Circulation Audit

Regular Subscription (payable in advance): 25 cents per copy, $2.50 a year: Canada and foreign, subject to publication policy, $3.50 per year. Special subscription: Upon written request on company letterhead this publication will be sent (not regularly) free of charge to companies, executives and supervisors engaged actively in excavating.

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It's easier to lift, lower, push or pull the Simplex Way!

Simplex
LEVER · SCREW · HYDRAULIC
Jacks

for every construction purpose
Awarded the Gold Medal for Safety
Ask for Catalog 44
Templeton, Kenly & Co., Chicago 44, Ill.

5TH WAR LOAN

Picture shows how 2-yd. Sauerman Scraper moves 120 tons of gravel an hour from hill to screening plant.

IT costs but a few cents per cubic yard to dig, haul and dump a big load of any material with a SAUERMAN Power Scraper or Slackline Cableway. The low cost and large capacity of these machines is proved daily on hundreds of excavating jobs.

SAUERMAN Machines are designed in suitable sizes and types to cover the requirements of every dig-and-haul job and each machine, whether large or small, offers the greatest possible economy of power and labor. Write for catalog.

SAUERMAN BROS., INC.
574 S. Clinton St., Chicago 7, Ill.

HERE'S PROFITABLE PLANNING HELP FOR YOU

LeTourneau rigs have literally hundreds of profitable uses. To help you determine where they fit into your work, we've developed this chart of major and secondary applications. Study it. If you're not using LeTourneau rigs on the checked applications (every one proved practical by actual use), see your LeTourneau dealer.

. . STUDY THIS CHART . . SEE WHERE LeTOURNEAU EQUIPMENT CAN HELP YOU MAKE MONEY ON EARTHMOVING AND MATERIALS HANDLING

★ MAJOR APPLICATIONS
● SECONDARY APPLICATIONS

	CONSTRUCTION							GOVERNMENTAL					RAILROADS			INDUSTRY		
	EARTHMOVING	BRIDGE	PAVING	HIGHWAY	LEVEE	BUILDING	PIPE LINE	FEDERAL	STATE	COUNTY	TOWNSHIP	CITIES	CONSTRUCTION	MAINTENANCE	OPERATION	FACTORIES	DOCKS & WHARFS	COAL HANDLING
SUPER C TOURNAPULL** (Capacity-15 heaped yards)	★		●	★	★			★	★	★		●	★				★	
SUPER C TOURNACRANE** (Lifting Capacities up to 20,000 lbs.)	●	●	●	★		★	★	★	●	●		●	●	●	★	●		
SUPER C TOURNATRAILER** (Capacity-17 heaped yards)	★		●	★	★	●	●	★					●				★	
MODEL D TOURNAPULL† (Capacity-2.3 heaped yards)	●		★	●				★	★	★	★	★	★	★			●	
MODEL D TOURNACRANE† (Lifting Capacities up to 10,000 lbs.)			★	●		★	●	★	●	★	★	★	●	●	★	★	★	
MODEL D TOURNATRUCK† (Capacities-5 tons)	●		★	●		★	●	★		★	★	★	●		●	★	★	
POWER CONTROL UNITS (for all "Caterpillar" tractors; Allis-Chalmers L, L-O, HD-10, HD14, S, SO; International TD40, TD18, TD14, Cletrac FD, FG, DD, DG, CG)	★	★	★	★	★	●	★	★	★	★		★	★	★	★	★	★	
CARRYALL SCRAPERS (for all tractors fitted with PCU's)	★	●	●	★	★	★		★	★	★	★	●	★	★				★
ROOTERS (for all tractors fitted with PCU's)	★			★	★		●	★	★	★	●		★	●				
TRACTOR CRANES (for all tractors fitted with PCU's)	●	★	●	●		★	★	★	●	●		●	●	●	★	★	★	
DOZERS (for all "Caterpillar" tractors)	★	★	★	★	★	●	★	★	★	★	●	●	★	★	★	●		●
SHEEP'S FOOT ROLLERS (for all tractors)	★		★	★	★			★	★	★			★					

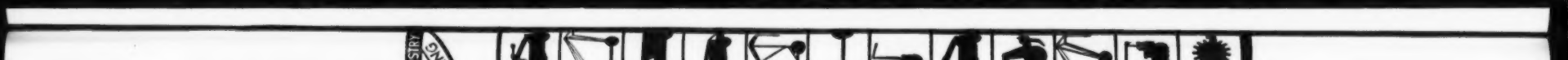
Don't take a chance of going into the "red" with slow, out-dated equipment on your postwar projects. Ask your LeTourneau dealer how the rubber-tired power of Tournapulls and the big capacity of LeTourneau rigs can get your jobs done faster and put more money in your pocket. See him NOW.

**15-yd. Carryall Scraper, 17-yd. Tournatrailer and Tournacrane (20,000 lb. lifting capacity) interchangeable on same Super C Tournapull prime mover.

† 2.3-yd. Carryall Scraper, Tournacranes (4,000 to 10,000 lbs. lifting capacities) and 5-ton Tournatruck interchangeable on same Model D Tournapull prime mover.

LETOURNEAU
PEORIA, ILLINOIS . STOCKTON, CALIFORNIA

LeTOURNEAU (Aust.) Pty. Ltd., Rydalmere, New South Wales, Australia.



The LaFayette—1837. One of the earliest B & O locomotives to haul the trains of the Presidents of the United States.

PREFACE OF A NEW ERA

GM Diesels have the exacting job of hauling B&O's highest-class freight, including trains of perishables and other foodstuffs for the armed forces as well as for civilian markets.

KEEP AMERICA STRONG BUY WAR BONDS

DAY in and day out, General Motors Diesel Locomotives are proving their ability to haul huge loads far, fast, with little attention and at low cost. In any vision of the future of transportation, these tireless giants must loom large. Already they have won a place of rare importance by their unprecedented performance in the work of the railroads at war.

GM
GENERAL MOTORS
DIESEL POWER

LOCOMOTIVES . . . . . *ELECTRO-MOTIVE DIVISION,* La Grange, Ill.

ENGINES . . 150 to 2000 H.P. . . . CLEVELAND DIESEL ENGINE DIVISION, Cleveland, Ohio

ENGINES . . . . . 15 to 250 H.P. . . . . DETROIT DIESEL ENGINE DIVISION, Detroit, Mich.

Answers to Everyday Questions about PREformed WIRE ROPE

1 *Is PREformed a lay of rope?*

2 *Is PREformed a special construction?*

3 *Just what does PREformed mean?*

4 *How shall I mark my orders to get PREformed?*

These are questions wire rope users are asking. Here are answers to everyday questions we receive.

First, let us be reminded that there are two kinds of rope. One is non-preformed wire rope, the kind that has served users for many years. Then there is PREformed, the kind which is newer, better, and longer lasting. Because it is a newer type rope, because it does a much better job for users, there are many questions asked about it. Let's consider a few.

FIRST . . . *"Is PREformed a lay of rope?"*

No. PREformed does not refer to a lay of rope. Lay refers to the twist or helical form which is characteristic of *all* wire rope. A rope may be Lang Lay, Right Lay, Left Lay, Reverse Lay . . . and each of these lays may be made either PREformed or non-preformed.

Lang Lay ropes should always be PREformed to counteract the tendency towards twisting, because wires and strands are both laid in the same direction in Lang Lay ropes. Further information on Rope Lay is given in the new Macwhyte Wire Rope Catalog, G-15.

SECOND . . . *"Is PREformed a special construction?"*

No, PREformed is not a special construction. Construction refers to the number and arrangement of wires in the rope . . . such as 6 x 17 (six strands of 17 wires each), 8 x 19 (eight strands of nineteen wires each), and so on. These constructions can refer to either PREformed or non-preformed wire rope. (For complete data on constructions, see Catalog G-15.)

THIRD . . . *"Just what is PREformed?"*

Macwhyte PREformed wire rope is the proper size, grade and construction you need, *PLUS*. This *plus* refers to the PREforming, a process which forms the wires and strands into a spiral, so that wires and strands lie naturally in place with a minimum of internal stress.

Illustration above tells the story. Notice how the wire has a special shape? It has been PREformed. When the rope is closed (put together in the closing machine), both wires and strands naturally fall into position in the rope.

Illustration above points to the end of a PREformed rope showing how wires lie naturally in place even though no seizing is there to hold them.

The result is a wire rope that is more flexible and that more quickly adapts itself to the equipment on which it is used. Thus, literally, PREforming means better PER-forming on the job.

A PREformed rope is safer to handle, too, because broken wires (which will happen after *long* usage) do not wicker out as in non-preformed wire rope.

FOURTH . . . *"How should I mark my orders to get PREformed?"*

Just add the words "Macwhyte PREformed" to your specifications. Like this, for example:

1,250 feet 1" 6 x 19 Lang Lay with IWRC, Macwhyte PREformed Monarch Whyte Strand wire rope.

If you leave out "Macwhyte PREformed," the specification then becomes a non-preformed wire rope specification. The reason? When PREformed is not mentioned on the order, it is a standard practice to supply non-preformed.

FIFTH . . . *Internal Lubrication, too!*

And a bonus *Plus* feature of Macwhyte PREformed wire ropes is *internal lubrication.* Not only are wires and strands PREformed, but each wire in the strands is coated with an elastic, non-drying film of lubricant, as explained on pages 10 and 11 of G-15 catalog.

We have been making wire rope for equipment like yours for many, many years. The benefit of that experience is yours for the asking. You can be assured, too, that when you select Macwhyte you are not only getting "the correct rope for your equipment," but also a personal interest in helping you get the *most* out of *your* rope.

MACWHYTE PREformed WIRE ROPE
Plus Internal Lubrication Selected Steels Tested-Proved

The correct rope for your equipment

NO. 741

MACWHYTE COMPANY

ARMY E NAVY

Wire Rope Manufacturers

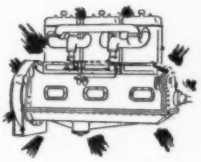
2903 FOURTEENTH AVENUE KENOSHA, WISCONSIN

Mill Depots: New York · Pittsburgh · Chicago · Fort Worth · Portland · Seattle · San Francisco. Distributors throughout the U.S.A.

MACWHYTE PREformed and Internally Lubricated Wire Rope · MONARCH WHYTE STRAND Wire Rope · MACWHYTE Special Traction Elevator Rope · MACWHYTE Braided Wire Rope Slings · MACWHYTE Aircraft Cables and Tie-Rods · MACWHYTE Stainless Steel Wire Rope · MACWHYTE Monel Metal Wire Rope

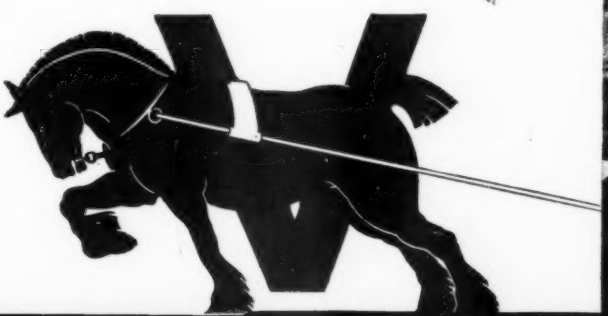
Keep Your Horses Pulling on the Victory Road

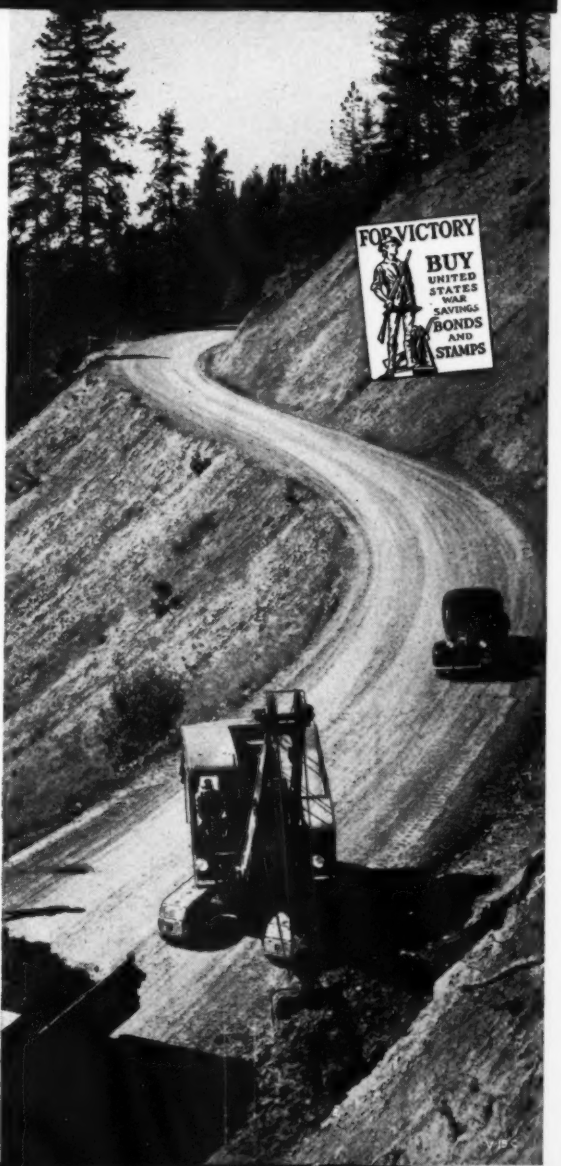
You'll get the most efficient excavator performance when all the "horses" in your engine are pulling full strength. Here are a few hints that may help keep that engine humming.



1. Inspect engine regularly and keep it clean.
2. Warm a cold engine up slowly (don't use choke more than is absolutely necessary).
3. Don't stop a heavily loaded engine abruptly. Let it idle a little to cool off before shutting down.

4. Flush radiator out whenever water gets dirty. Be sure water added is clean. Never add cold water to an overheated engine.
5. Use good grade lubricating oil. (Follow manufacturer's recommendations). Clean sump and change filter element frequently (every other oil change is good practice).
6. Keep proper amount of water in battery. (Add water when starting, never when shutting down). Keep terminals covered with grease to avoid corrosion.
7. In gasoline engine, keep spark plugs and distributor points properly adjusted and clean.
8. In diesel engine, check injection nozzle pressures after 300 hours on a new engine, every 1500 hours thereafter **KEEP FUEL CLEAN** Storage tank and transfer containers or pumps should be kept free of both dirt and water.
9. Get complete care and maintenance instructions from manufacturer or distributor, and follow them carefully.





ARMY E NAVY

Bucyrus-Erie

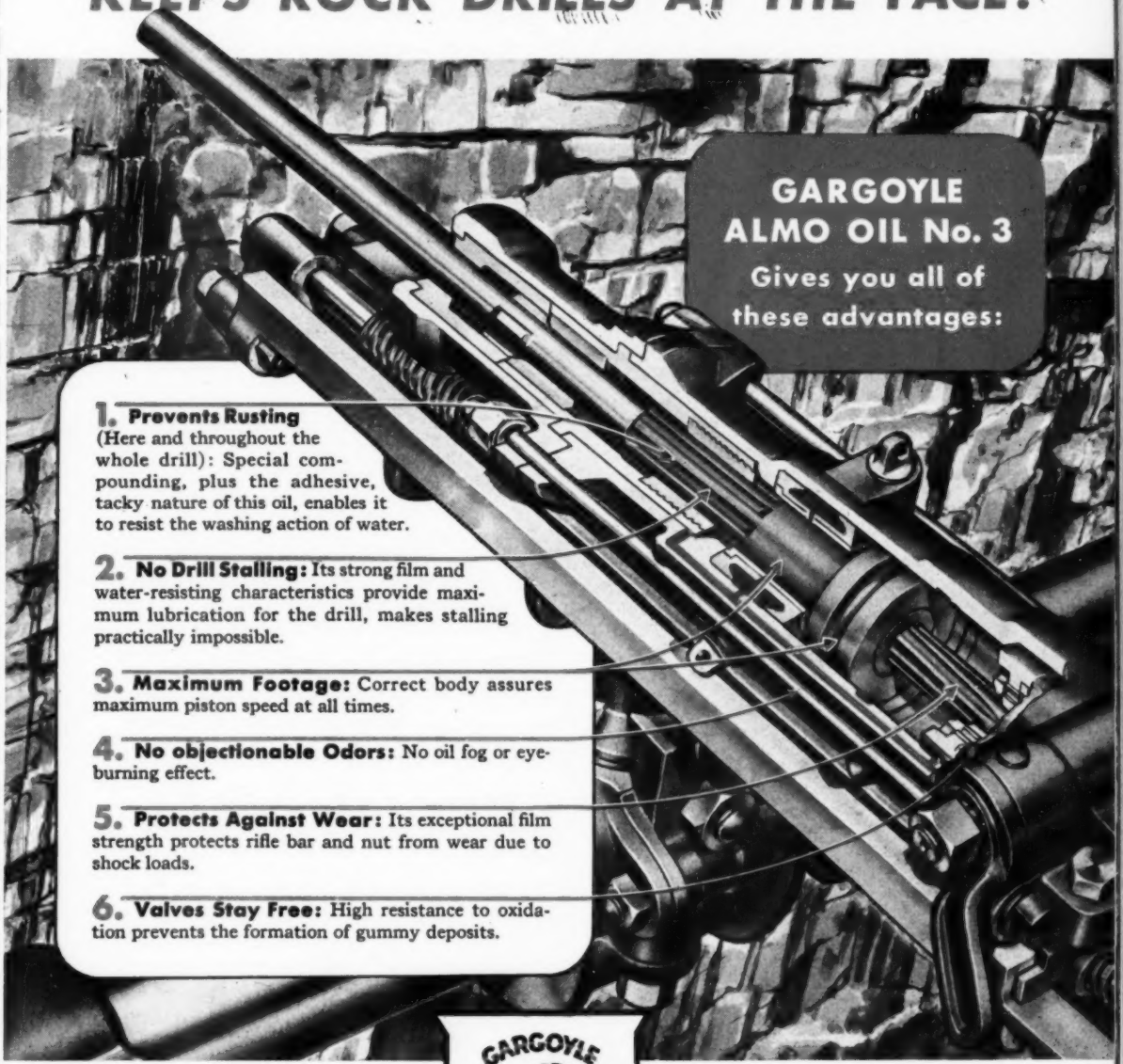
SOUTH MILWAUKEE, WISCONSIN, U. S. A.

Talk to Northwest owners NOW!
YOU'RE planning for the future—making up your mind about methods, jobs, personnel, equipment.
The pressure of war construction, more than ever before, is showing the difference in performance between equipment built to do a job and equipment built to meet a price.
Talk to Northwest owners! Learn something about the type of performance that Northwests are giving under the conditions of continuous service and high pressure war jobs.
You'll learn why one out of every three Northwests for years has been a repeat order in the hands of the nation's leading contractors.
Ask how the Northwests are doing!
NORTHWEST ENGINEERING CO.
1750 Steger Bldg., 28 E. Jackson Blvd.
Chicago 4, Illinois
Six more NORTHWESTS
Remember that GEO. W. CONDON bought SIXTEEN NORTHWESTS
Thirty-nine Northwests for Welsh Construction Co. and Geo. F. Driscoll Co. New York, N. Y.
39
This makes the Seventeenth NORTHWEST
TWENTY-SIX NORTHWESTS for CHICAGO BRIDGE IRON COMPANY
the NORTHWESTS are doing!
-and when you have a real Rock Shovel you won't have to worry about output in dirt
NORTHWEST

HOW TO SOLVE OPERATING PROBLEMS WITH *Correct Lubrication*

Special Protection Against Shock Loads and Water

KEEPS ROCK DRILLS AT THE FACE!



GARGOYLE ALMO OIL No. 3
Gives you all of these advantages:

1. **Prevents Rusting** (Here and throughout the whole drill): Special compounding, plus the adhesive, tacky nature of this oil, enables it to resist the washing action of water.

2. **No Drill Stalling:** Its strong film and water-resisting characteristics provide maximum lubrication for the drill, makes stalling practically impossible.

3. **Maximum Footage:** Correct body assures maximum piston speed at all times.

4. **No objectionable Odors:** No oil fog or eye-burning effect.

5. **Protects Against Wear:** Its exceptional film strength protects rifle bar and nut from wear due to shock loads.

6. **Valves Stay Free:** High resistance to oxidation prevents the formation of gummy deposits.

ONE OF A SERIES OF SUGGESTIONS TO AID PRODUCTION

SOCONY-VACUUM OIL CO., INC.

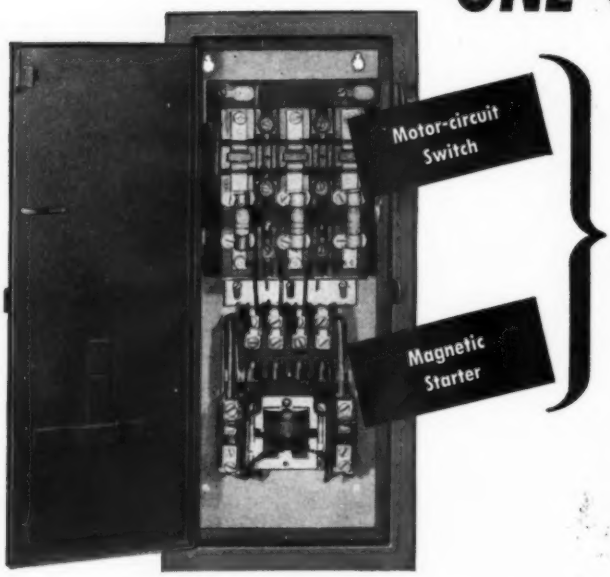
GARGOYLE Lubricants

Standard Oil of N.Y. Div. · White Star Div.
Lubrite Div. · Chicago Div. · White Eagle Div.
Wadhams Div. · Magnolia Petroleum Co.
General Petroleum Corp. of California.

CALL IN SOCONY-VACUUM

EVERYTHING YOU NEED

to control and protect your motor in ONE COMPACT UNIT

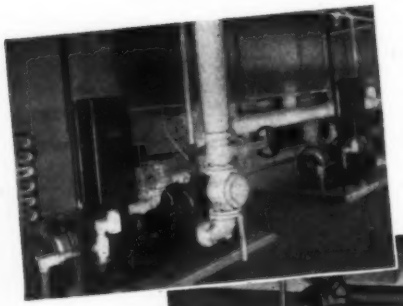


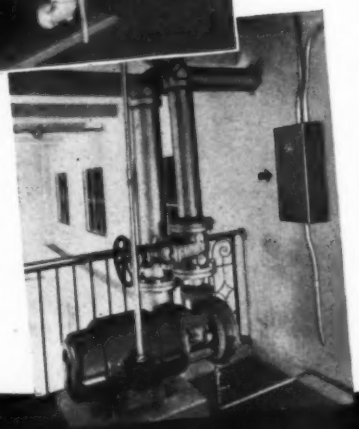
COMBINATION STARTER

Complete full-voltage control of squirrel-cage motors or the primary control of wound-rotor motors—with extra safety, very low installation cost, good appearance, and other advantages

Why two devices?

ONE can do the job.





G-E combination starters can be mounted on or near the machine, even in damp locations, such as shown in this pump-room installation

This combination starter drives a ball-bearing splash-proof motor direct-connected to a centrifugal pump

Which Type Do You Need?

If you want short-circuit protection, you can select a starter which has a fusible motor-circuit switch or a breaker to provide such protection. Or, if you do not need short-circuit protection, you can choose a starter which is equipped with a nonfusible motor-circuit switch that serves only as a disconnect and provides no short-circuit protection. Both types are available in a variety of enclosing cases.

Co-ordinated for Protection

With G-E combination starters, you're sure that the motor-circuit switch or breaker has the proper rating for the magnetic starter with which it is used. The fuses or breakers provide adequate short-circuit protection to the motor, the starter, and subsequent motor-branch-circuit conductors when connected to a power supply for which they are recommended. The co-ordination of thermal overload relays with the fuses or breakers affords complete motor overcurrent protection under any condition of operation.

Increased Safety

The motor-circuit switch, being in the same case with the magnetic starter, is mechanically interlocked with the cover. Thus the cover cannot be opened while there is power on the starter. This is an important advantage because, when a separately mounted switch and starter are used, there is nothing to prevent the operator from opening the starter case while the starter is "hot."

WANT MORE DATA?

More complete information on combination starters will be found in Bulletin GEA-3715. Ask our nearest office for this bulletin or write direct to General Electric Co., Schenectady 5, N. Y.

Every week 192,000 G-E employees purchase more than a million dollars' worth of War Bonds.

GENERAL ELECTRIC

Modern Multiplier of Manpower ... WIRE ROPE

Perhaps while in pursuit of food, which scampered under a fallen tree, some primitive man angrily pulled on a vine tangled around the tree and found that he would not need to call for help to move an otherwise impossible load.

In solving the first manpower shortage, this primitive no doubt wondered who pulled as hard on the other end of the vine as he did on his and little realized he had discovered the principle of the pulley.

Today, the pulley has been multiplied into the block-and-tackle and the latter rove with wire rope so strong and tough that mankind goes on hoisting and moving loads which yesterday were considered impossible.

To Union Wire Rope engineers the impossible is a constant challenge. In the finest of wire rope laboratories they work at the one job of making wire rope stronger and tougher to last longer. The tensile strength, torsional values, fatigue life, ductility, hardness of wires, etc. are predetermined. From numerous tests and checks the pedigree of every run of wire rope is recorded and then, wherever possible, its performance on the job is watched. With Union engineers wire rope making is a specialty in which they do not propose to be excelled.

FREE

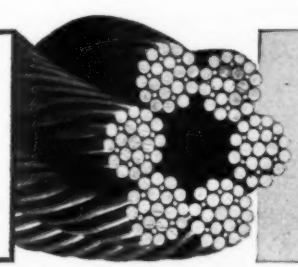
If You Are Not On Our Mailing List send for these bulletins: "Correct Handling of Wire Rope", "Socketing Wire Rope", "Splicing Wire Rope", "Wire Rope Lubrication", "Rope Dope". Engineering information supplied without obligation.

UNION WIRE ROPE CORPORATION, 2142 Manchester Ave., KANSAS CITY 3, MO.
Tulsa Houston Chicago Salt Lake City New Orleans Monahans, Texas
Portland, Ore. Ashland, Ky. Atlanta

B-44

For Two Years of Team-work with Our Armed Forces

WHEN YOU NEED
PREFORMED
WIRE ROPE
SPECIFY
union-formed



union Wire Rope

"THE ULTIMATE IN LOW COST WIRE ROPE"

EXCAVATING
ENGINEER
JUNE • 1944

Expert tells how wire rope is made, explains uses of various types and gives maintenance facts that will prolong life of product and assure greater safety.

Care and Maintena

W. IRVING LEX
(Asst. Chief Engineer,
Wire Rope Engineering Division,
John A. Roebling's Sons Co., Trenton, N. J.)

WIRE ROPE IS ONE of our most reliable structural materials because it is a precision product. It is fabricated of carefully selected steel wires that have been cold drawn to extremely close tolerances and made to meet rigid physical and chemical requirements.

Contrary to a belief held by many of its users, wire rope is not a product that is easily and quickly fabricated by taking a bunch of wires and twisting them into strands, and then twisting these strands into a rope. It is made of a definite number of wires of the correct size and these are laid together—not twisted—to form a pattern known as a strand. A certain number of similar strands are then laid together around a core or center to form the finished rope. Care must, of course, be exercised during the manufacturing process to lay the wires in the strands and the strands in the rope to the correct pitch or lay, and to employ a center of the right diameter, if the finished rope is to operate to the best advantage in service.

Obviously, many other factors must be given careful consideration from the making and rolling of the steel, the cleaning, drawing, and heat treatment of the wires to the fabrication of the finished product on the rope closing machine. We won't go into detail regarding these processes. Let it suffice to mention that unless the fundamental requirement in good rope making is recognized, the other operations, no matter how carefully performed, will not impart reliability and quality to the product. This fundamental requirement is steel from which can be produced wire that is homogeneous and uniform throughout its entire length and possessing the toughness and fatigue resistance necessary to withstand the severe conditions of operation a wire rope is generally called upon to perform.

Types of Wire Rope

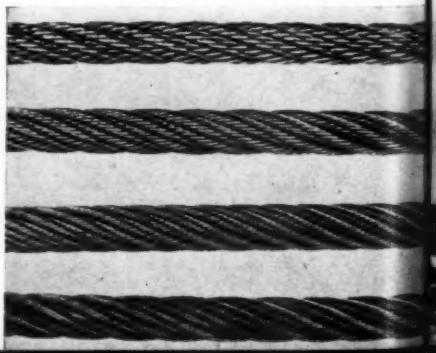
Wire rope is manufactured in several different grades, and each of these can be furnished in many different constructions. Generally speaking, there are four standard constructions, the 6 x 7, the 6 x 19, the 8 x 19 and the 6 x 37. In the illustration on page .... the relative size of the wires, which imparts various degrees of flexibility to these different constructions, is clearly shown. The 6 x 7 construction, makes a fairly coarse rope, and in fact, it is often referred to as the "coarse laid" construction. It is used to advantage where abrasive or corrosive conditions are quite severe and where the size of the sheaves and drums over which it operates are so liberal that bending is of little consequence.

The 6 x 19 construction is fabricated of more but smaller size wires, and as a result this makes a much more flexible type of rope. It can withstand bending to much better advantage than a 6 x 7 rope, but still is well able to resist abrasion or scrubbing types of abuse. Probably more of this type of rope is employed than any other because it lends itself more readily to a multiplicity of uses.

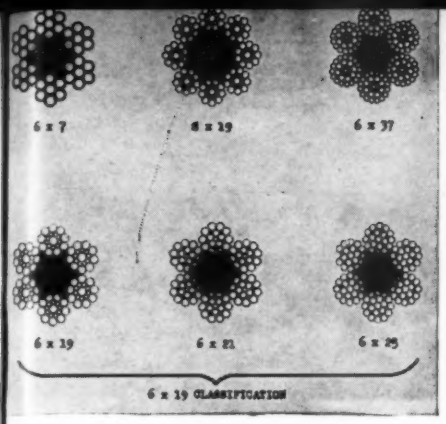
The 8 x 19 and 6 x 37 ropes are, in the order given, the most flexible and the least abrasion resistant of the standard rope constructions. These ropes are employed where limited sheave or drum diameters or the number of sheaves over which the rope is reeved demand a very pliable construction. Due to the relatively small wires of which they are fabricated, they are not well suited to conditions where severe abrasion or corrosion is of major importance.

Cross-section of Six Ropes

The difference between these standard constructions is perhaps better illustrated by the cross-sectional views of these ropes which also illustrates the way in which the various names have been derived. The first number in each case applies to the number of strands in the rope and the second to the approximate number of wires in each strand. For instance, the 6 x 7 rope has six strands,



● **Below: Generally speaking, these are the four standard constructions of wire rope: (top to bottom): 6 x 7, 6 x 19, 8 x 19, and 6 x 37.**



● Cross-sectional views better illustrate the differences between the standard constructions and also the way in which the various names have been derived. The first number in each case applies to the number of strands in the rope and the second number to the approximate number of wires in each strand.

...rance of Wire Rope

each of which is made with seven wires.

There are, of course, many other constructions of wire rope besides the ones described here, and there are also several different constructions which fall under each of the four standard classifications. For example, 6-strand ropes with from 16 to 25 wires in each strand fall under the 6 x 19 classification. A 6-strand rope may actually have 19, 21, or 25 wires respectively in each strand. Likewise, 6-strand ropes with from 26 to 46 wires in each strand fall under the 6 x 37 classification. Each different construction is best suited to a particular field of use, and of course, best economy will only be obtained by employing the correct construction for any given installation.

6 x 7 Construction

The coarse laid, or 6 x 7 construction, is often used on slopes or mine haulages where the rope must withstand considerable scrubbing but where the drum and sheaves over which it must bend are very liberal in diameter.

6 x 19 Type

The 6 x 19 type of rope is used for most general hoisting purposes because it combines resistance to abrasion and ability to withstand bending to about equal degree. The large crane illustrated on this page shows one application for this type of rope, while the shaft hoist shown in the other illustration on the same page shows another application.

8 x 19 and 6 x 37 Constructions

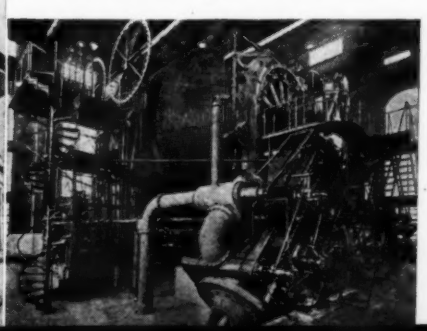
The 8 x 19 construction is often used on elevators. It is sometimes used on traveling cranes, but in general, the 6 x 37 construction is much more satisfactory for this service. In the smaller sizes, this represents the most common application for 6 x 37 ropes in the industrial field.

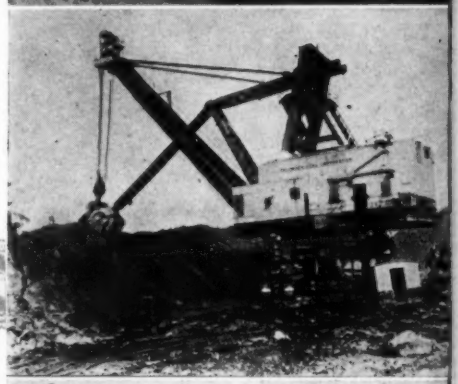
In the larger sizes the 6 x 37 construction is used on stripping shovels in the Mid-Western coal fields. Another application for the 6 x 37 construction is on the larger dredges.

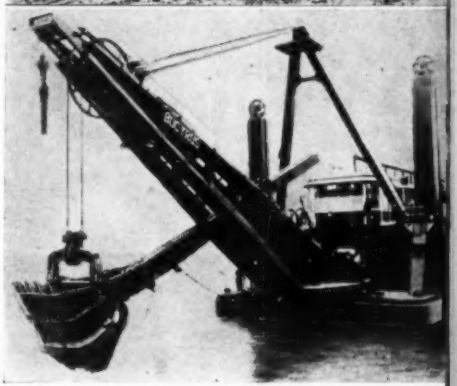
Independent Wire Rope Center

Any of the various standard constructions can be furnished with either a hemp center or a center consisting of an independent wire rope. The all-metallic construction, however, is most commonly employed in 6-strand ropes since conditions requiring its use can seldom be met satisfactorily with the 8 x 19 type of rope. An independent wire rope center adds about 7½ per cent to the

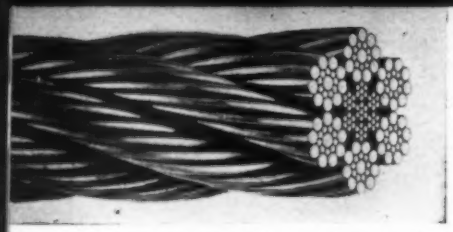
● The large U. S. Navy Yard crane (below) and the 30′ diameter drum of a mine hoist of the Quincy Mining Co. (to the right) are two applications of the 6 x 19 type of rope which is used for most general hoisting purposes because it combines resistances to abrasion and ability to withstand bending to about an equal degree.







● In the large sizes the 6 x 37 construction is used on stripping shovels, like the Bucyrus-Erie 1050-B above and Marion 5561 in the middle, and on the larger dredges like the Bucyrus dipper dredge, "Crest," shown in the bottom picture.



● Any of the various standard constructions can be furnished with either a hemp center or with a center consisting of an independent wire rope as pictured above.

strength of a rope, and in some cases it may be desirable to use it for this purpose. In the majority of cases, however, it is employed to provide a firmer support for the strands of the rope.

For some classes of service, notably on excavating machinery such as draglines and shovels, the operating tensions are so great and the sheave and drum sizes so limited in relation to the diameter of the rope, that high pressures exist between the rope and the equipment over which it must bend. To prevent flattening and distortion under such pressures, the independent wire rope center construction is generally employed.

Hemp Center

An independent wire rope center can also be used to advantage where such high temperatures are encountered that a hemp center would become charred to burned and reduced in diameter so that the center allows the strands to pull in toward the middle. The tendency for the strands is to overlap, but since overlapping cannot take place, destructive nicking occurs at the points of strand contract. This reduces the strength of the rope and detracts to a considerable extent from its useful life.

Regular and Lang Lay Ropes

The 6 x 7, 6 x 19, and 6 x 37 ropes are sometimes fabricated in the so-called Lang Lay construction. In the Regular Lay construction the wires are laid in the strands opposite to the direction in which the strands are laid in the rope. As a result, the individual wires on the outside of the rope are approximately parallel to the axis of the rope.

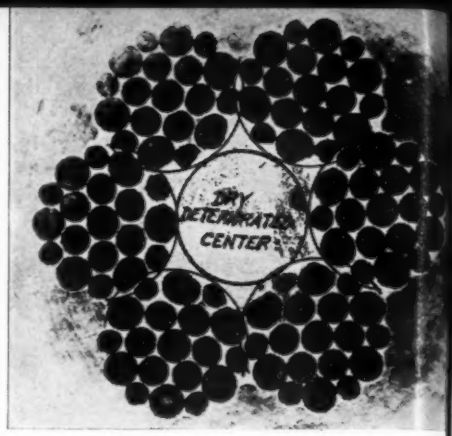
In the Lang Lay construction the wires are laid in the same direction as the lay of the strands and thus the wires make a considerable angle with the rope axis. The Lang Lay rope has the same strength as the Regular Lay and it has the advantage of being slightly more flexible for the same size and strand construction.

The Lang Lay construction also has the advantage of offering greater resistance to abrasion. This is because of the longer length of each outside wire exposed to wear. The Lang Lay construction, however, is a little more susceptible to damage during installation, and it generally needs more care in its operation.

During the last few years, improvements in the fabrication of Lang Lay ropes have been made so that it is becoming more and more possible to increase rope service by making use of the inherent advantages of Lang Lay ropes on installations which previously required the use of the Regular Lay construction.

Standard and Preformed Rope

There is another type of rope that is being given considerable space in advertisements today — preformed rope. Preformed rope is made of the same material as is the standard type of rope, and it can, therefore, be furnished in any size, grade, and construction, and as either Regular Lay or Lang Lay.



● Wire rope with dry deteriorated center. Where high temperatures are encountered a hemp center may become charred and reduced in diameter so that the center allows the strands to pull in toward the middle, and since the strands cannot overlap, destructive nicking occurs at the points of strand contact.

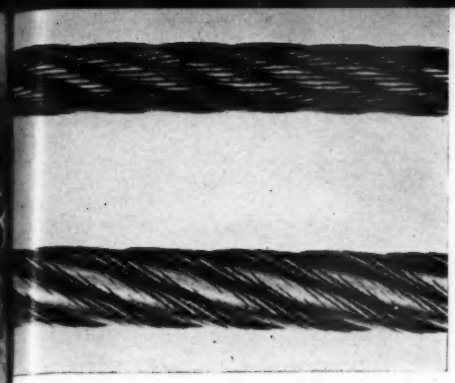
It is fabricated in the same manner as standard rope except that during the final operation the wires and the strands are formed to the spiral shape they must assume in the finished rope. Due to this, the strands do not have a tendency to unlay when the rope is cut, and this inert characteristic is what makes a preformed rope readily distinguishable from one of standard construction.

The tendency not to unlay makes preformed rope less susceptible to some forms of abuse and less likely to be damaged during installation, and today, when so many are being forced to employ inexperienced help, this advantage of the preformed type of rope may represent a real economy.

Preformed rope is also a little more flexible than standard rope of the same size and construction, and it is for this reason that better service can be obtained by employing it in cases where bending conditions and fatiguing stresses are particularly severe. For instance, it is generally used today on excavating machines, on some elevators where the sheave sizes or manner in which the rope is reeved subjects it to a fairly severe bending condition, and also in many cases where the ropes are subject to considerable handling and protruding wire breaks might present a safety hazard.

There is another difference between standard and preformed rope that becomes apparent after the rope has been in service for some time. This is that broken wires are not so easily detected in the preformed as they

● On some classes of service, notably on draglines and shovels (like the Bucyrus-Erics pictured here) the operating tensions are so great and the sheave and drum sizes so limited in relation to the diameter of the rope, that high pressures exist between the rope and the equipment over which it must bend. To prevent subsequent flattening and distortion the independent wire rope center construction is generally used.



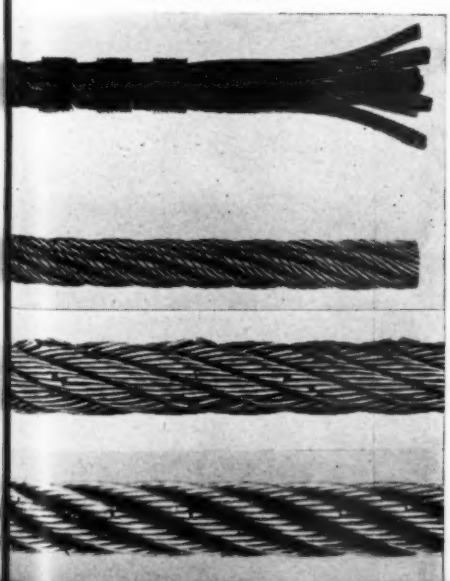
● Worn regular lay wire rope (top) and worn lang lay rope (bottom). In regular lay the wires are laid in strands opposite to the direction in which the strands are laid in the rope. In lang lay the wires are laid in the same direction as the lay of the strands and thus the wires make a considerable angle with the rope axis.

are in the stand type of rope. Because the strands and the wires have been shaped to their spiral forms, it is understandable why, when a wire break occurs, the broken ends remain in their original positions and do not spring up from the surface as they do on ropes of standard construction. Due to this characteristic, it is generally difficult or impossible to locate broken wires in a preformed rope by running one's hand, a piece of cloth, or waste along it.

We have found that the best way to examine a preformed rope is to use a good light and to inspect it by eye, making no attempt to wipe it first since this only tends to smear grease over the worn crowns. If these crowns are not touched, the ruptures can be seen at the points where contact with the sheave and drum grooves normally keeps the wires entirely free of lubricant.

It is not meant to imply that the inspection of preformed rope is too difficult to be accomplished with accuracy. It should merely be pointed out that there is a difference between the two types of rope and a somewhat different procedure may have to be followed when inspecting preformed rope if its true condition is to be accurately determined.

● Preformed rope is fabricated in the same manner as standard rope except that during the final operation the wires and the strands are formed to the spiral shape they must assume in the finished rope. Due to this, the strands do not have a tendency to unlay when the rope is cut (2nd from top) like they do in standard rope (top). Broken wires are not so easily detected in preformed wire rope as in standard wire rope. 2nd from bottom: broken wires in standard rope; bottom: broken wires in preformed wire rope. Because the wires and the strands have been shaped to their spiral form, the broken ends remain in their original condition when a wire break occurs.



Wire Rope Slings

An outstanding application of wire rope in the industrial and excavating fields is for slings, and the reliability of this structural material is as important in this class of work as in the field of operating ropes. It will be appreciated that wire rope differs from chain for the reason that chains, as the old saying goes, are only as strong as their weakest link.

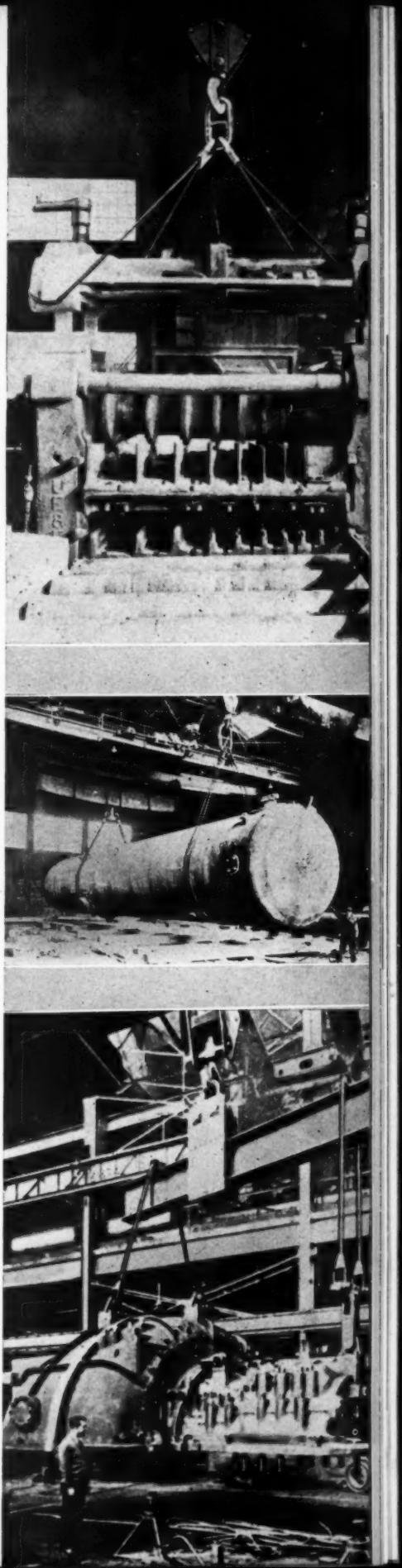
A wire rope sling seldom has less than 114 wires and very frequently 259 or 271 wires. It is, therefore, quite apparent that the breaking or cutting of a few wires will not seriously impair its strength. At the same time, ample warning is given by the broken wires so that the rate of deterioration can be watched and replacement can be made before a dangerous condition is reached.

This, the same as with operating ropes, represents a very definite safety feature, but it must be remembered that corrosion, the same as in operating wire ropes, can cause deterioration of an indeterminate type, which must be prevented by an adequate lubricating practice.

Wire rope slings are of three main types, one of these being made from wire rope with the ends spliced, socketed or arranged with some other type of fitting to connect it to the load.

A second type of sling is made with a grommet, or a closed loop made of a single strand laid up by

(Continued on page 330)



● An outstanding application for wire rope in the excavating and industrial fields is for slings. The top two pictures show grommet slings, or closed loops made of single strands laid up by hand in the form of a wire rope, as its main member. The bottom picture illustrates the use of a wire rope sling with sockets.

● General view of quarry and plant from road entrance.

● Bucyrus-Erie 27-T in foreground and Sanderson Cyclone 14 in back do all primary drilling.

● Drilling a block with Ingersoll-Rand jackhammer.

Granite fro

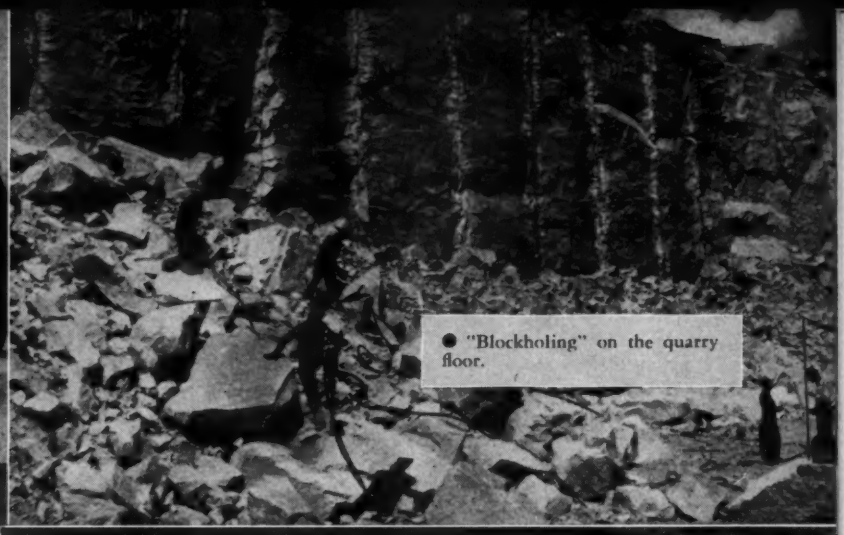
Primary and secondary blasting prepares granite for loading by two Bucyrus-Erie electric shovels. Use Bucyrus-Erie clamshell and Marion shovel for additional stockpiling.

Pictures by JOSEPHINE and NELSON SEVERINGHAUS

WORKING TO MEET the demands of war jobs, two electrically operated Bucyrus-Erie 4-cu. yd. shovels load out about 150 tons of blasted granite each an hour in the Rock Chapel plant of the Consolidated Quarries Corporation, near Lithonia, Georgia. The face of the quarry is 150 feet

● A shot with Nitramon over half the length of the 1200-foot face. Face is now 150 feet high.

● Operating staff: (left to right) W. F. Alford, ass't superintendent; K. D. Howington, treasurer, and Nelson Severinghaus, general manager.



● "Blockholing" on the quarry floor.

om Georgia

high and 1,200 feet long. The 1,000-foot advance from the first working to the present face represents 15 years of operation with a total production of almost six million tons of stone.

Drilling is done with a Bucyrus-Erie 27-T and a Sanderson Cyclone No. 14 churn drill which put down 6⅝-inch blast holes 35 feet apart, generally about 17 feet back from the vertical face. Drilling speed is about 2½ feet an hour. Drill holes are marked for depth and capped with cement to keep them in prime condition until they are ready to be loaded. DuPont Nitramon in cans blasts the holes with 30,000 pounds loaded for an ordinary shot — one-third pound of Nitramon usually equals one ton of stone brought down for the power shovels.

For secondary blasting, eight Ingersoll-Rand jackhammers are used on the rocks too big to handle. Hercules Gelamite dynamite is used. Popshots are set off at the end of shifts to avoid moving men or machinery during working hours.

The granite, loaded into 12-cu. yd. semi-trailers, is pulled by five Mack trucks to a 60 x 48 Allis-Chalmers jaw crusher located at the edge of the quarry. The semi-trailers were developed by Nelson Severinghaus, general manager of this quarry, one of the largest crushed stone plants in the South. From the primary crusher the material gets intermediate storage from where it is moved to two 20-inch Superior McCulley secondary crushers on a 42-inch belt conveyor.

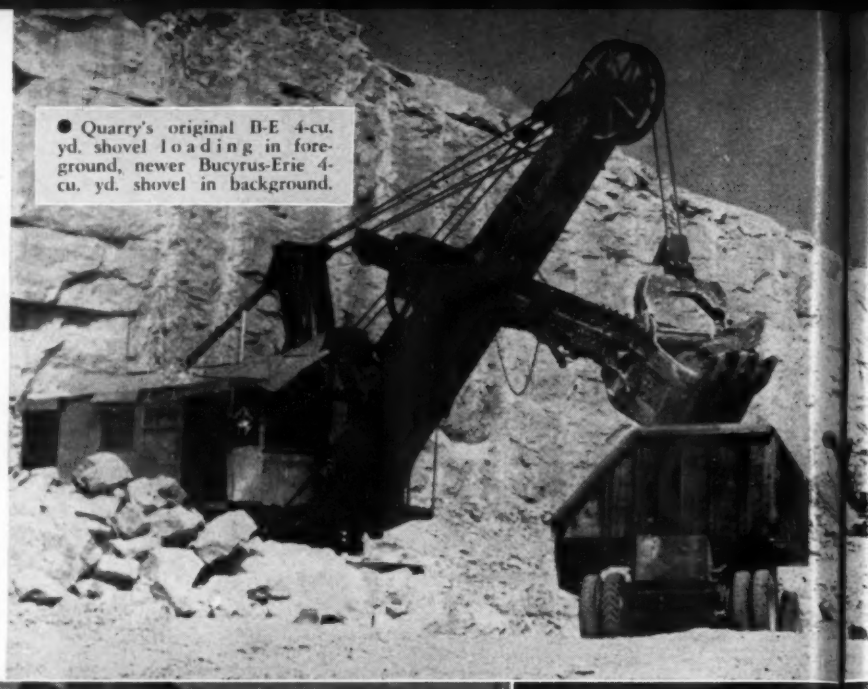
From secondary crushers the stone travels on a moving belt, with its head pulley 70 feet in the air, to a screen house where two Allis-Chalmers 60-inch by 20-foot rotary screens, with two Hummer vibrators and a Robbins Eliptex, separate it

● Bucyrus-Erie 100-B 4-cu. yd. electric shovel acquired from TVA in the first part of 1943.

into seven sizes, ranging from two to eight-inch mesh. The stockpiles are located over a concrete tunnel with a steel door under each pile, through which stone of a desired size or mixture can be drawn onto moving belts which carry it toward the loading belt. After dropping on the loading belt the stone moves upward toward the main loading bins where, after recleaning and rinsing, it can be dropped into railway cars or into special bins for truck hauling.

Demands on the output makes necessary the use of a Bucyrus-Erie ¾-cu. yd. chemshell and a Marion ¾-cu. yd. shovel for additional stockpiling of stone. Also, a truck-mounted scraper hoist with crescent bucket is used for the same purpose.

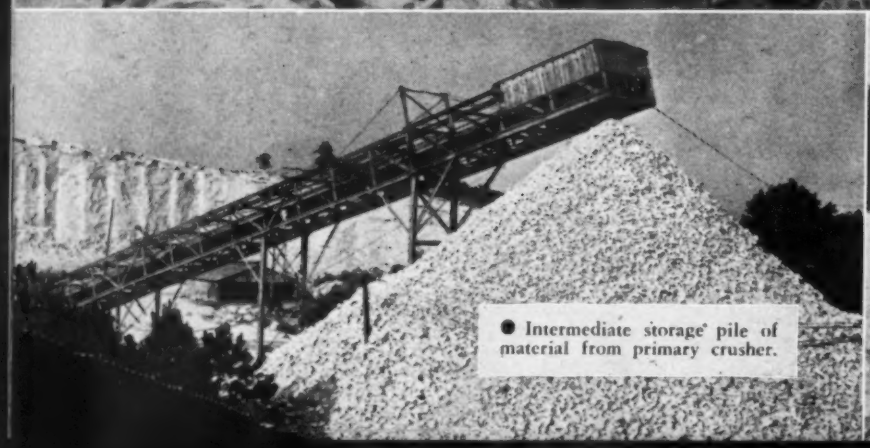
In addition to crushed stone, Consolidated Quarries Corporation manufactures granite concrete bricks and blocks made from the fines left after screening.



● Quarry's original B-E 4-cu. yd. shovel loading in foreground, newer Bucyrus-Erie 4-cu. yd. shovel in background.

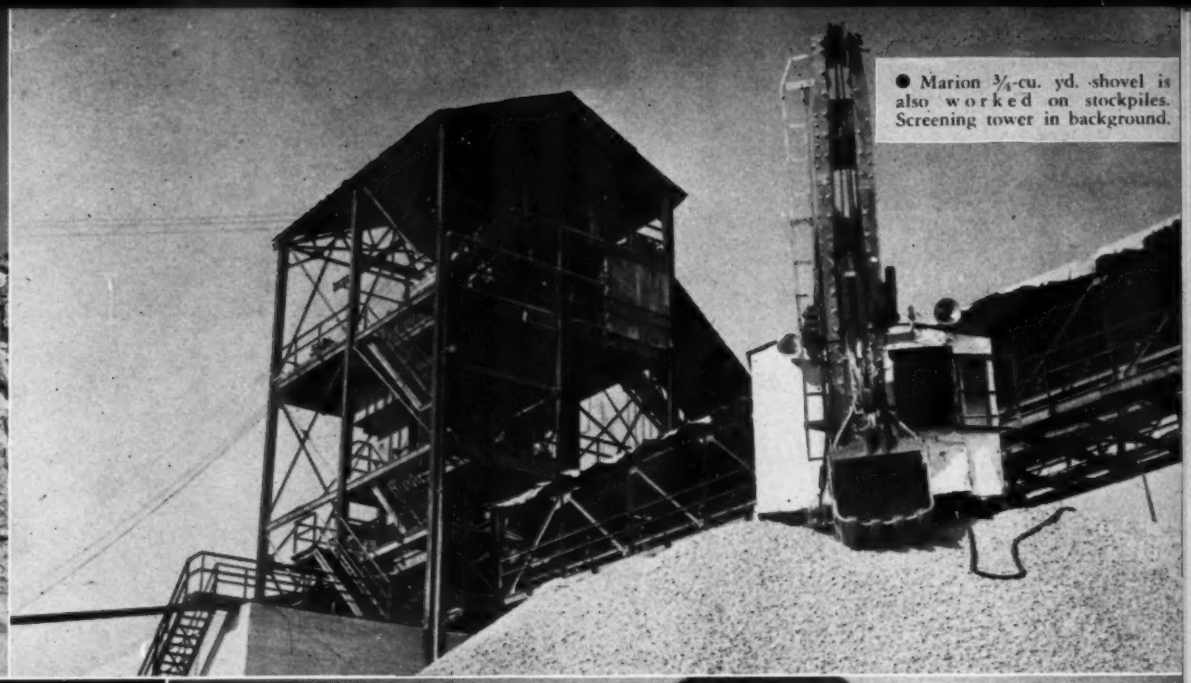
● 12-cu. yd. semi-trailer dumping into primary crusher.

● Stone moving from primary storage to secondary crushers on 42-inch conveyor.

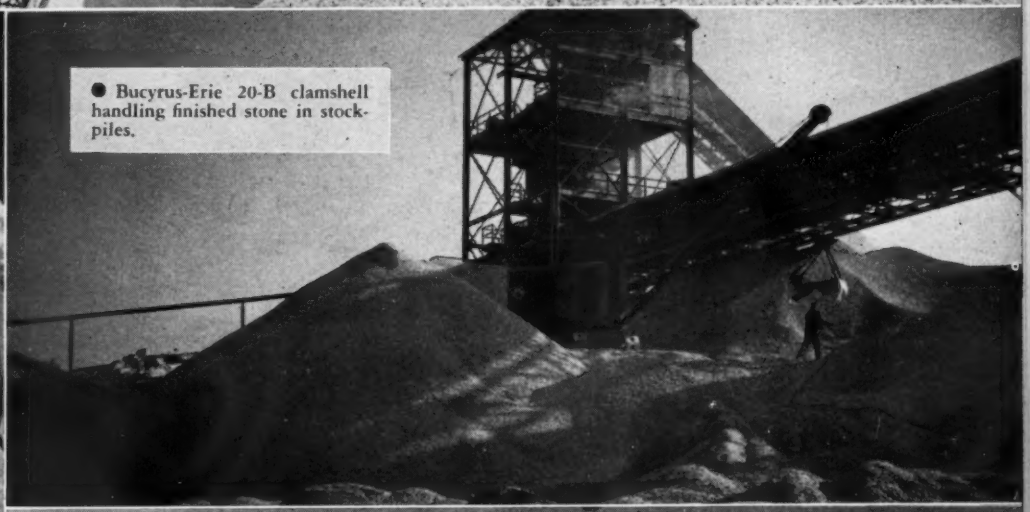


● Intermediate storage pile of material from primary crusher.

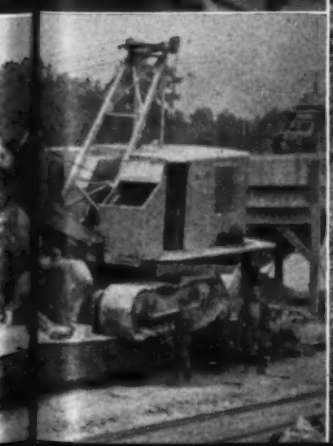
● Loading out Bucyrus-Erie 2-cu. yd. diesel which was sold when the B-E 4-cu. yd. electric, being erected beside car, was acquired.



● Marion ¾-cu. yd. shovel is also worked on stockpiles. Screening tower in background.



● Bucyrus-Erie 20-B clamshell handling finished stone in stockpiles.



● Brickplant and yard. Concrete block and brick are made of the finely crushed granite.

U. S. ENGINE
River and Harb

"The works that are built to lighten the burdens of man and to add to his comforts and pleasures in time of peace serve well in time of war."

Brigadier General
J. S. KINGMAN
(Senior member of the Board of Engineers for Rivers and Harbors, United States Army)

FOR MORE THAN a century, the Army Engineers have been charged with the responsibility of developing and improving our waterways for navigation, and in recent years also for flood control, and other meritorious purposes. The total volume of such work, over a period of more than 100 years, aggregates more than three billion dollars.

This work has provided thousands of miles of navigable inland waterways. It has provided flood protection to vast areas of fertile and productive land, areas in which are found thriving cities and towns, important highways and railroad lines, successful industries and profitable farms. Such work can be translated into terms of conservation and development of resources and in terms of a more powerful, productive and unified nation.

"The works that are built to lighten the burdens of man and to add to his comforts and pleasures in time of peace serve well in time of war," Brigadier General J. S. Kingman, senior member of the Board of Engineers for Rivers and Harbors, United States Army, said in a recent speech emphasizing the importance of Army Engineer river and harbor work in increasing America's victory potential.

Conceived during the Revolutionary War as a military agency to help "provide for the common defense," the Corps of Engineers was soon developed also as an agency to help "promote general welfare."

During the supreme test of World War II, a test in which Axis aggression has challenged the productive ability of this country as well as its ability to move goods and materials in sufficient volume and on time, these peacetime works have, in no small measure, helped to provide for the common defense.

Food and feed have been produced in quantity back of protective flood works; factories have turned out an unprecedented flow of munitions; and highway and rail movements of

• Upstream aerial view of Hansen Dam, large earthfill embankment designed by and built under the supervision of U. S. Engineers across Tujunga Wash, 20 miles north of Los Angeles. This dam is the key unit of a $70,000,000 flood control program. The picture shows Big Tujunga Wash coming in from the upper right and Little Tujunga Wash in the top center. All of the reservoir area is included.

Inland Shipping —

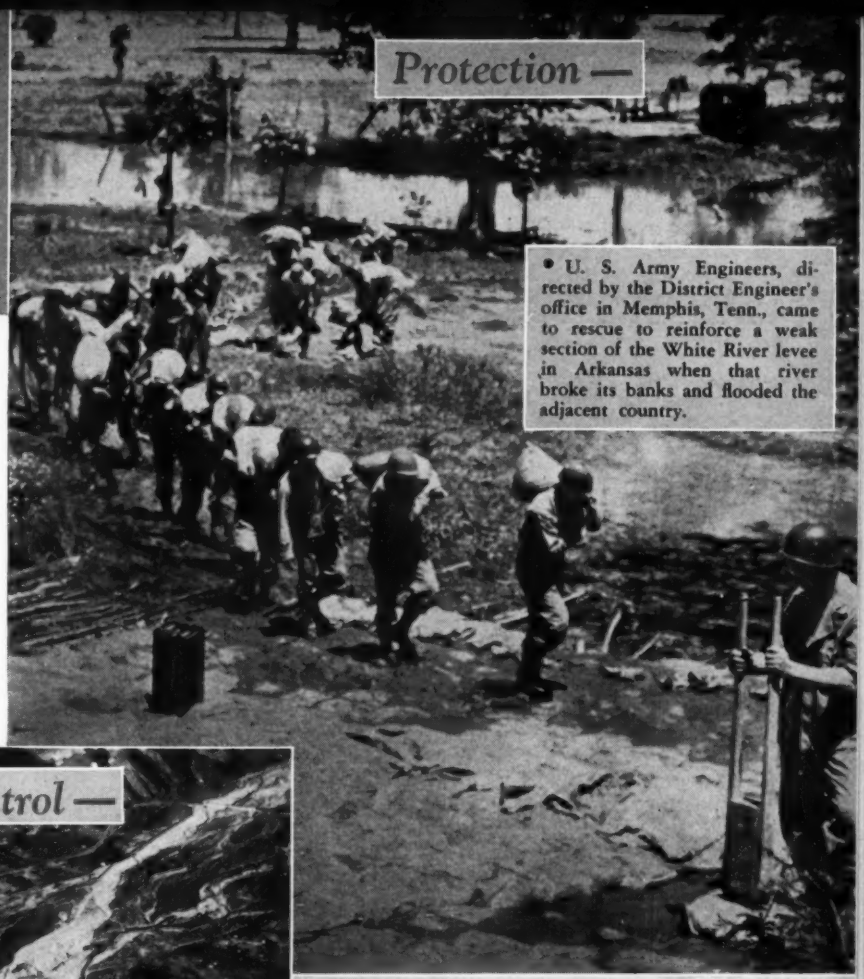
• New ship lock, MacArthur Lock at Sault Ste. Marie, recently constructed by Army Engineers.

NEERS
for Work

men and material have reached their destination on time. Water transportation has expedited the flow of war goods by relieving our highways and railroads of vast tonnage of bulk freight. Improved inland waterways have also made it possible for the tremendous shipbuilding program to be decentralized—to move the fabrication of parts and complete units to inland areas nearer the manpower and materials needed for their production. Thus, in war, is our nation collecting dividends from a program designed primarily to provide peacetime advantages.

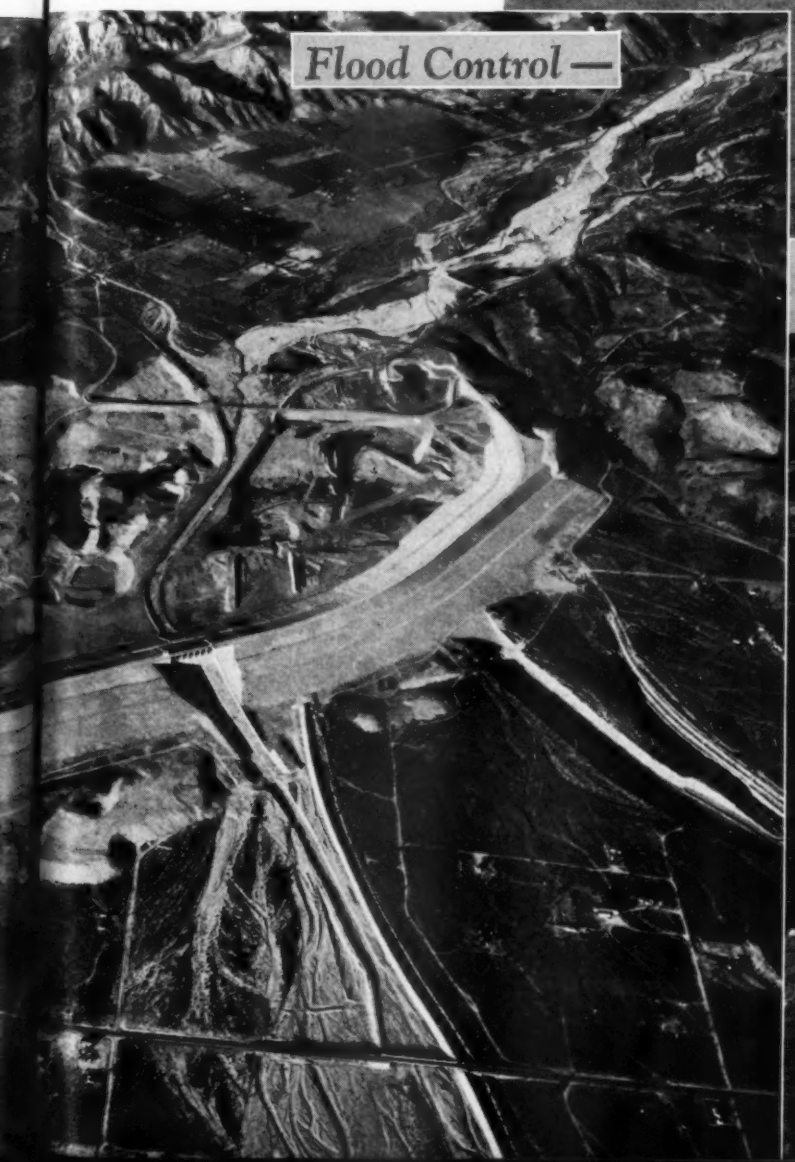
In 1927, the Congress recognized

Protection —



• U. S. Army Engineers, directed by the District Engineer's office in Memphis, Tenn., came to rescue to reinforce a weak section of the White River levee in Arkansas when that river broke its banks and flooded the adjacent country.

Flood Control —



Power —

• General view, from left abutment, showing general construction progress of Norfolk Dam, North Fork River, Mountain Home, Arkansas, being built under supervision of U. S. Engineers.

the importance of past civil works of this type and the importance of more comprehensive plans for future development. It authorized surveys of the navigable rivers of the United States and their tributaries with a view to their most effective improvement for navigation, the control of floods, and the development of such other water uses as storage of water for power, irrigation, and domestic and industrial water supply. In 1935, it authorized these surveys to be supplemented by such additional study or investigation as the Chief of Engineers finds necessary to take into account important changes in economic factors as they occur, and additional stream flow records, or other factual data.

Reports have been made on more than 200 rivers, and the engineering and economic data have been compiled for a program involving some four billion dollars' worth of construction—a program that can be started at any time and prosecuted as rapidly as the Congress may deem it wise to direct. Through the years, our Engineers have accumulated in factual reports more detailed information than is available to any other nation of the world on its respective water resources.

To date, the Corps of Engineers has placed in operation some 42 dams and reservoir projects widely dispersed throughout the United States. A large number of these reservoirs present opportunities for recreational development. At the present time, there is no authority to expend the small amount of funds needed to make the recreation and conservation values at these reservoirs fully available. However, the Congressional Committee on Flood Control recommended that where practical, without reducing flood control benefits, projects should be fully utilized to provide recreational facilities.

The men and machines and methods developed in building for peace have been able to meet the challenge of building for war.

As Lieutenant General John C. H. Lee wrote recently from one of the theaters of operations:

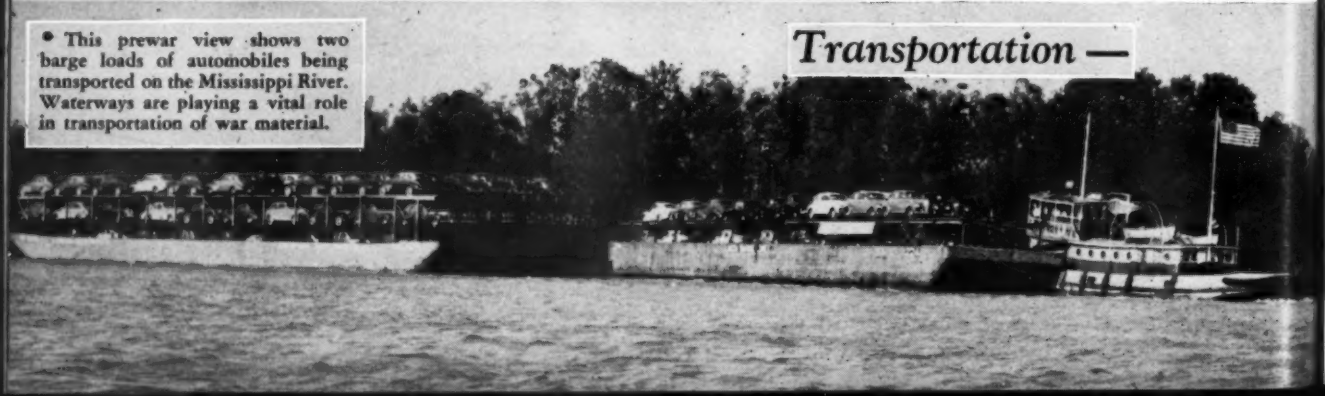
"We are using to great advantage the Engineer officers we have trained through the years on waterways and flood control work. Most of the business side of the war effort overseas, as well as many of the command positions, is under the guidance of these Engineer officers who learned through positions of real responsibility how to manage men and equipment against time and the elements —the essentials of logistics—either in war or in peace."

Rescue —

• U. S. Army Engineers come to the rescue with an amphibious jeep when the White River in Arkansas floods a town.

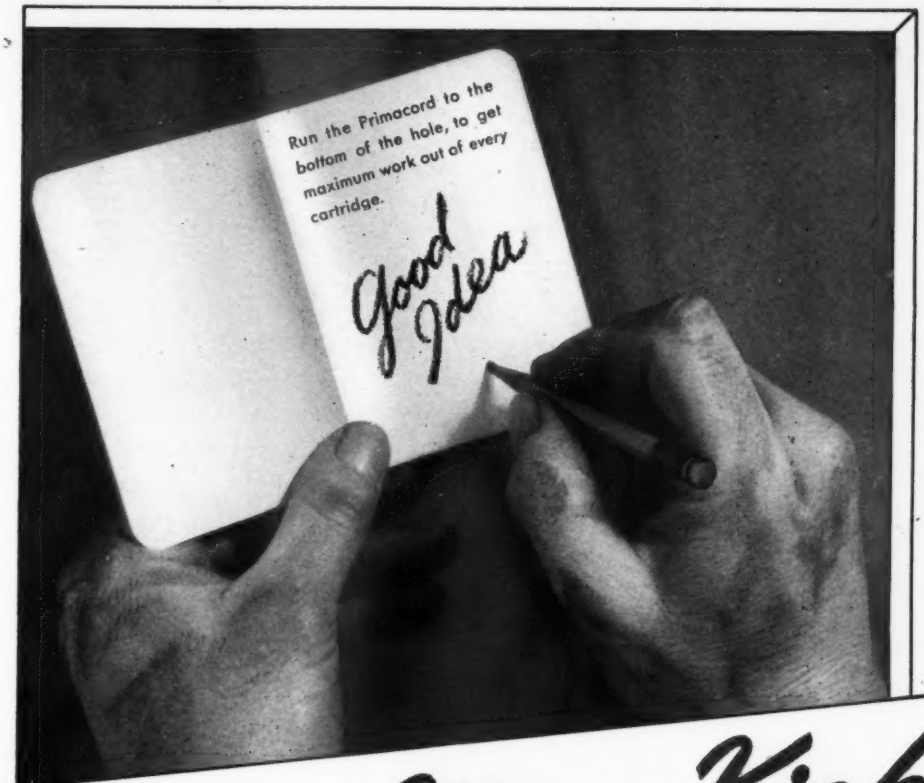
Soil Erosion —

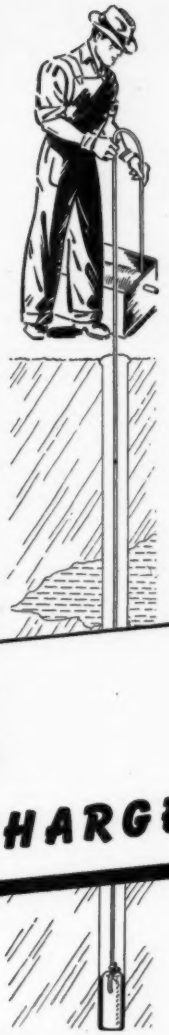
• Willow type bank protection on Mississippi River under supervision of U. S. Engineers. The weaving of the willow mat is in progress at the barge in the background. The mat will be sunk later by use of rock.



Transportation —

• This prewar view shows two barge loads of automobiles being transported on the Mississippi River. Waterways are playing a vital role in transportation of war material.





Get More Kick
OUT OF THE BOTTOM CHARGE

To make sure that the powder at the bottom of the hole "goes" with its maximum force, give it the extra kick imparted by Primacord. This can be done only by lacing the Primacord through the first cartridge and lowering this to the bottom of the hole. The remaining cartridges are then loaded in the usual manner, and the Primacord, extending up the side of the hole, acts as the detonating agent *for each cartridge in the load.* Result — a powerful shot *all the way down* . . . with economy in powder used, easier loading, greater safety, *and better blasting.*

Send for the Primacord book — it's full of *profitable* blasting suggestions.

13

PRIMACORD-BICKFORD
Detonating Fuse
Manufacturers of Safety Fuse since 1836

THE ENSIGN-BICKFORD COMPANY • SIMSBURY, CONNECTICUT

CAREFUL MAINTENANCE
will keep your Blade Equipment
PRODUCING *for* VICTORY

Your hydraulic blade equipment is a wartime tool — it should be kept in top-notch shape to stand the gaff of 3-shift victory performance. Correct maintenance is a "must" if your present machines are to meet the greatly increased production schedules called for by wartime needs. Check the points listed below.

BUCYRUS ERIE

1. **Use a good grade of oil for the hydraulic system.**

2. **Inspect hydraulic oil level at beginning of each shift. Keep supply tank filled to high-level plug.**

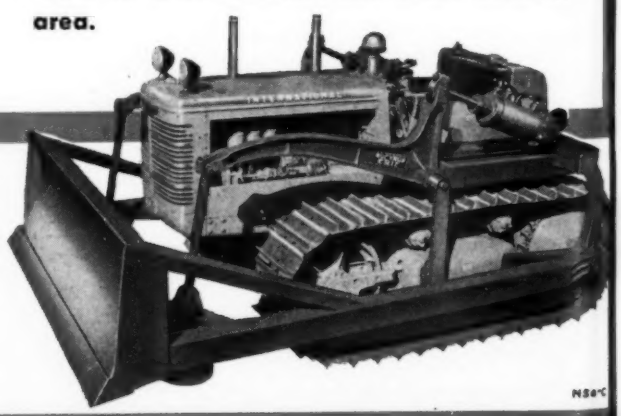
3. **Drain the oil when it is dirty. Floating particles wear pump and valve.**

4. **Inspect threads of all pipe and fittings when exposed. Rethread or replace any parts having worn, burred or rusted surfaces.**

5. **Use good grade lubricants. The same grease (lime-base chassis grease) used in the small hand gun for the tractor is used for blade fittings.**

6. **Remember that a little lubricant carefully and regularly applied does a lot more good than over-lubrication only on occasion.**

7. **Be sure to get grease to all points of bearing. Move blade while greasing in order to work lubricant into entire bearing area.**

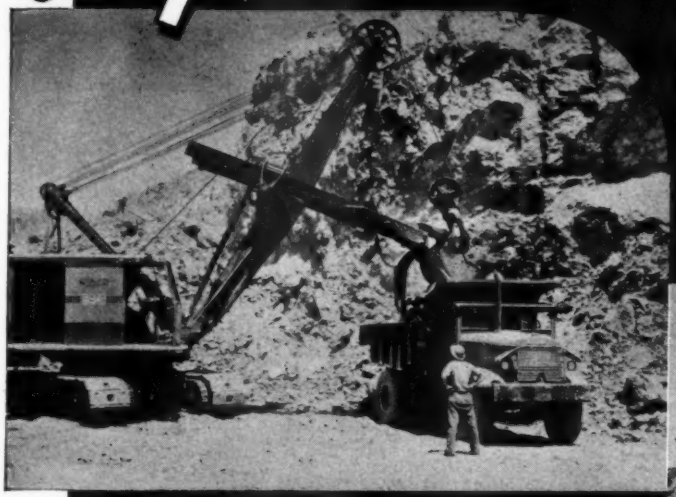


Bucyrus-Erie Bullgraders and Bulldozers are built to work smoothly, engineered to give you capacity production with the least amount of trouble. Hold this original working efficiency through proper lubrication and maintenance — your International TracTracTor distributor will be glad to help you.

BUCYRUS ERIE TRACTOR EQUIPMENT

SEE YOUR
INTERNATIONAL TRACTRACTOR DISTRIBUTOR

Dependable EUCLIDS COST LESS TO OWN

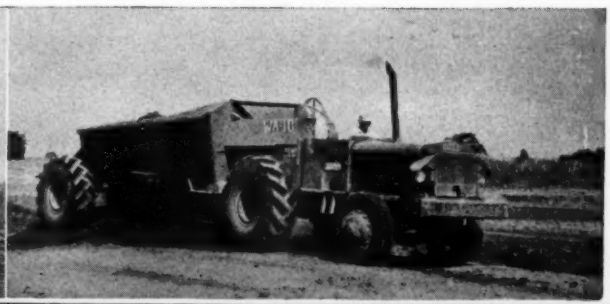


On scores of big earth and rock moving jobs, and in industrial operations too, Rear-Dump and Bottom-Dump EUCLIDS are moving more yards and tons per hour at consistently lower cost. Carrying pay loads of 15 to 30 tons at speeds up to 33 m.p.h., EUCLIDS cut down the round trip time from the loading unit to dump and carry more pay loads per hour.

Designed and built throughout for the hard service of off-the-highway hauling, EUCLIDS actually cost less to own than ordinary hauling equipment. Lower operating and maintenance cost, plus dependable trouble-free operation, has made Euclid the favorite equipment of contractors and industrial users for hauling all kinds of heavy excavation and materials.

If you need new equipment for a current job or are planning for your peace time requirements, be sure to consult your Euclid distributor or write us for descriptive literature.

The EUCLID ROAD MACHINERY Co.
Cleveland 17, Ohio



EUCLID SELF-POWERED HAULING EQUIPMENT For EARTH ROCK COAL ORE

Field NOTES

Movable Bins for Gravel

The Gordon Construction Company used elevated bins like this, constructed on skids, in the storage yard where sand, gravel, etc., were loaded for the construction of the Denver City Hall. The bin, holding 15 to 20 yards, was filled by a clamshell and easily skidded with the shovel or trucks to a different location when empty. When separate bins were used for different grades of aggregates a card on the front designated the grade contained in each.

JOSEPH C. COYLE

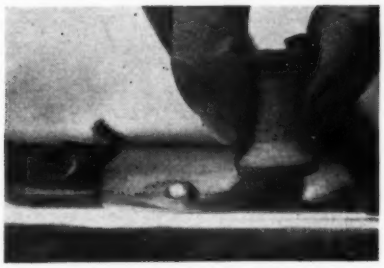
● An elevated bin, constructed on skids, can be moved with ease to different locations on a job.

Spool Makes Handy Device to Brighten Screw Heads

The round head screws usually found about the cab room are awkward and inconvenient to clean, particularly at their base.

To get the screw head uniformly clean, make use of the common empty thread spool with a center hole about the same size as the base of the screw head. Cut off some of the flange of the spool on both sides of one end and lay a narrow strip of emery cloth over the straight surfaces. Hold the piece of emery cloth to the sides of the spool, place the spool over the screw head and give it a number of rapid half turns. The sharp corners or edges of the inside of the spool carry the abrasive cloth down in contact with the bottom of the head, cleaning it with the same degree of brightness as the rest of the screw head. Any slight circular marks made by the emery strip on the metal around the screw head can be obliterated when the flat areas are cleaned.

FRANK W. BENTLEY, JR.



● Spool makes handy screw head polisher.

BLAST-HOLE Drilling

New Tool Increases Footage

By G. R. WATSON

To meet the wartime demand for more footage from blast hole drills operating in mines and quarries, important improvements have been made in design of drilling tools.

A thorough analysis of drilling operations revealed the fact that conventional tools used in drilling water and oil wells are not suitable for drilling blast holes. Some of the faults and objections to using conventional water and oil well drilling tools for blast hole work are as follows:

1. Tool weight far below the capacity of the machine results in proportionate low footage drilled.

2. Small diameter drill stems deflect and permit tools to follow seams and drill crooked holes.

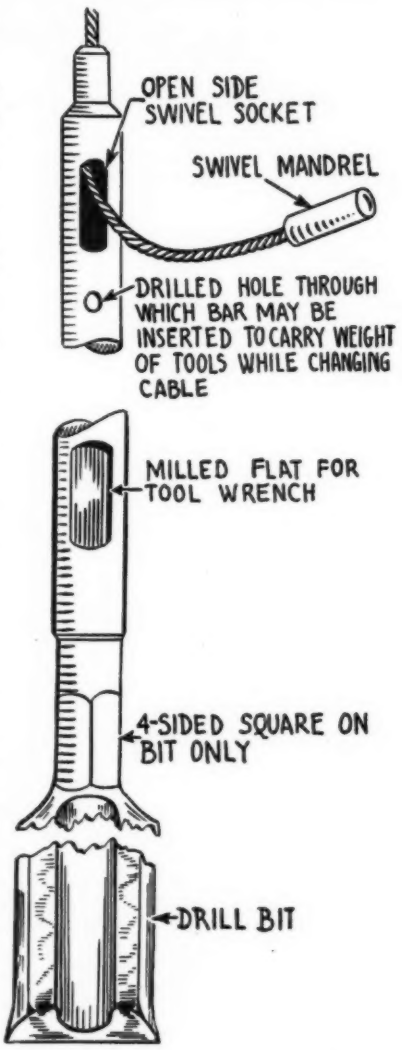
3. Rough surfaces, shoulders and offsets at wrench squares and collars drag on walls of hole and catch on tool guides to prevent free gravity fall of tools and thus dissipate energy without doing work on the bottom of the hole.

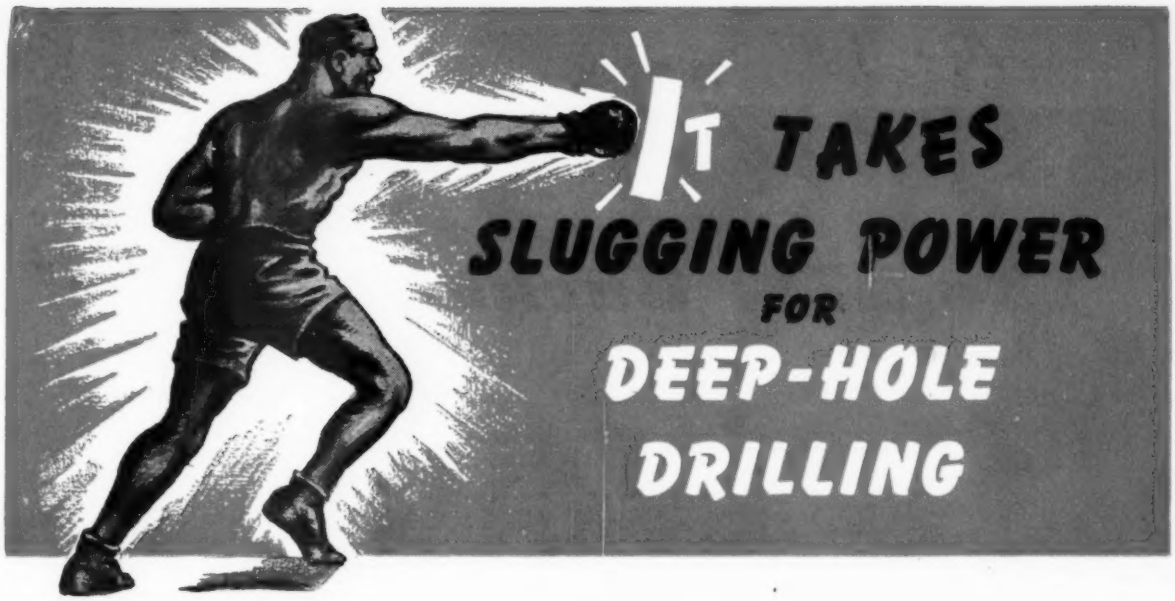
4. A swivel socket with box and pin joint which has to be broken down with tool wrenches whenever the line is inspected or reset in mandrel is a nuisance and time-killer on any blast hole drill.

5. Wrench squares with four flat sides reduce the section of drill stems and cause weakness at the critical point just above the box collar which results in frequent failures.

6. Drill stems with box and pin collars "forge welded" are unneces-

(Continued on page 328)


OPEN SIDE SWIVEL SOCKET
SWIVEL MANDREL
DRILLED HOLE THROUGH WHICH BAR MAY BE INSERTED TO CARRY WEIGHT OF TOOLS WHILE CHANGING CABLE
MILLED FLAT FOR TOOL WRENCH
4-SIDED SQUARE ON BIT ONLY
DRILL BIT

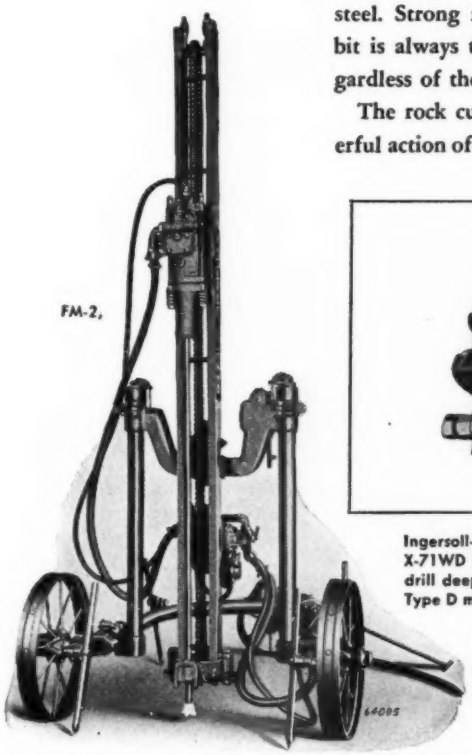


The X-71WD drill is designed especially for deep-hole drilling. Its heavy piston, the heaviest used in any hammer drill, has an extremely long stroke and hits the drill steel a solid, powerful blow.

Added to this slugging power is a unique follow-through characteristic which overcomes the inertia of heavy drill steel. Strong rotation results; hence the bit is always taking deep, fresh bites regardless of the hardness of the rock.

The rock cuttings created by the powerful action of the drill are easily removed by a new method of blowing which greatly reduces the loss of air around the drill steel shank. As a result, the high pressure so necessary for cleaning deep holes is maintained.

These operating features, plus the ruggedness and stamina which are essential qualities of a champion, will help you drill more feet of hole day in and day out. The use of Jackbits in conjunction with the drilling power of the X-71WD will give you even better results. Jackbits are available in sizes ranging from 1⅜ to 4½ inches.



X-71WD Drill

Ingersoll-Rand has developed two wagon mountings to provide portability for the powerful X-71WD Drill. The FM-2, shown at the left, is an extremely flexible 3-wheeled mounting. It will drill deep holes at any angle and will handle six-foot steel changes. Then there is the improved Type D mounting which is used for 10 or 15-foot steel changes, and for holes to a depth of 40 feet.

Ingersoll-Rand

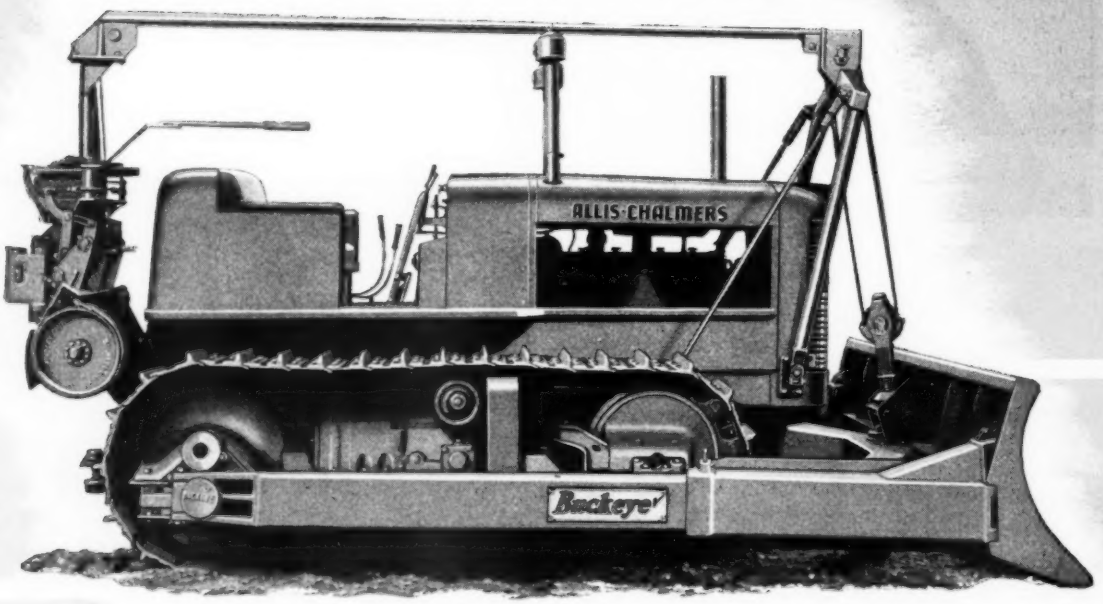
11 BROADWAY, NEW YORK 4, N. Y.

5-380

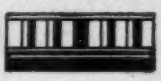
COMPRESSORS • TURBO-BLOWERS • ROCK DRILLS • AIR TOOLS • CENTRIFUGAL PUMPS • CONDENSERS • OIL AND GAS ENGINES

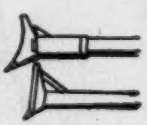
look it over...

The NEW Buckeye Dozer!



This is the NEW Buckeye cable-controlled dozer that is setting higher standards of bulldozer and trailbuilder performance under the toughest possible operating conditions. Hour after hour, testing engineers put it through the most punishing operations with just one thought in mind—"Break the bulldozer." But it couldn't be done! They roll larger yardage loads, punch out boulders, uproot huge trees and stumps, and do a hundred and one odd jobs better than you ever imagined possible.





The single point, center lift suspension of the moldboard permits natural, direct, straight lift of the blade. Full power of the tractor engine is utilized and maximum lifting power provided for the blade.

The new moldboard design packs more strength into less weight. There's no useless excess weight to absorb tractor power. Rigid and fully braced, the moldboard can withstand all types of dozing work. Blade is reversible with replaceable corner bits.

Now available for Allis-Chalmers and Cletrac Tractors. Write for details.

CENTRO-LIF

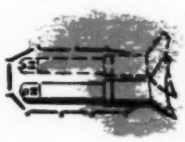
Built by Buckeye

these features mean EXTRA PROFITS

...even on your toughest jobs!

Center Lift, single point suspension — Blade is raised in natural, direct way assuring maximum lifting power. Wear and friction losses are minimized. Design and construction of the new model are simplified. Full power of tractor engine is utilized.

Blade easily angled — With new push arm and horn construction, trailbuilder blade can easily be adjusted to right or left on a single king pin to standard desired angles by removing the two landside pins which hold the blade rigidly in place when angled or straight.

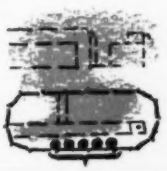


Double Trunnion Tilting — Double trunnion mounting permits either end of trailbuilder or bulldozer blade to be tilted 12" by attaching one push arm to the top trunnion on one side while the opposite arm is attached to the lower trunnion on the other side.

Bigger yardage loads — Scientific blade curvature rolls the load ahead enabling the operator to take deeper cuts — no dead weight — less power required — bigger payloads — moves faster — less strain on tractor — blade digs its own way in like a plow.

Finger-Tip, Split-Second, Fraction-of-an-inch Control — Buckeye Power Control Unit takes hold of the line with a smooth, powerful pull, without any jerking action. Large clutches and brakes, plus external location, mean cool operation and long life.

Balanced Design — Full length of crawlers stay on the ground — no lost traction — maximum pushing power assured — mechanical downward pressure not required. Weight is distributed uniformly over each of the crawler shoes on the ground. Blade hugs radiator.



BUCKEYE TRACTION DITCHER CO.

Findlay, Ohio

Shots from the FIRING LINE

Need for Construction Equipment Desperate

The need for construction machinery in mines, forests, oil fields, on farms and for railroad maintenance is so great and the amount of idle used equipment which is being made available for sale or rental is so small by comparison that the situation is desperate, officials of the Construction Machinery Division of the War Production Board reported at a recent meeting of the Used Construction Machinery Industry Advisory Committee in Washington, D. C.

Colonel Jackson Palmer (Army Air Forces) stated that the bottleneck in used construction machinery is unquestionably damaging the entire war effort. Committee members expressed the unanimous opinion that the cause is the out-dated pattern of ceiling prices which is halting the release of the equipment by its contractor-owners.

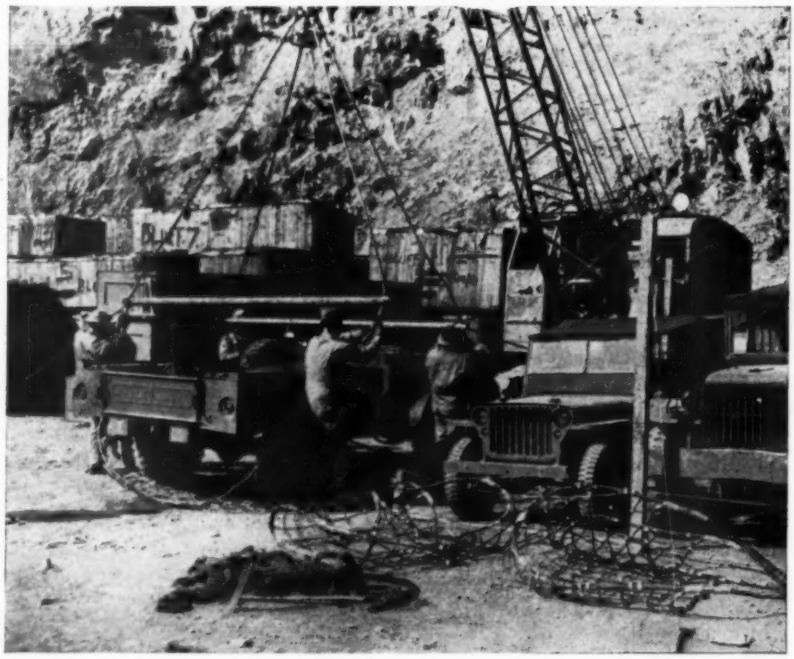
Robert J. Carroll, representing the government at the meeting, said that over 90% of new production of construction machinery is absorbed by direct military orders. The indirect war needs must, therefore, be filled by used equipment. He presented the following figures on need and availability:

Type of Machinery	Non-Military Requirements (new)	Available for Sale (used)	Available for Rent (used)	Registered in Contractors' Inv. (used)
Tractors	20,000	404	870	22,615
Motor Graders		73	227	4,788
Shovels and Cranes		430	1,387	16,444
Total		970	2,434	43,847

Mr. Carroll pointed out that only approximately two per cent of the used machinery registered in contractors' inventories is available for sale. The majority of it is in use doing essential war work at present.

Obstacles to Free Flow

Committeeman asserted that while the retention of Maximum Price Regulation No. 136 is the main obstacle to a free flow of used construction machinery, the difficulty is aggravated by freight provisions of Order 136 and existing tax rates. MPR 136 provides that the ceiling price for used construction machinery is to be 55% of the present new cost if it is purchased "as is" and 85% of present new cost if it is rebuilt and guaranteed. The 30% differential for rebuilding must include freight to the distributor's rebuilding shop.

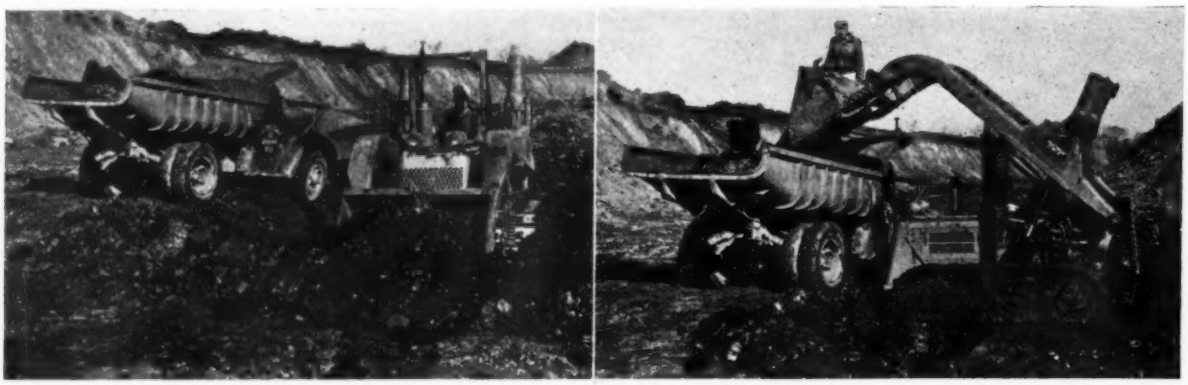


• **Three-quarter ton truck being slung, prior to being lifted by the Koehring crane and lowered into the hatch of a ship in North Africa.** *U. S. Signal Corps Photo*

The Committee contended that when this part of MPR 136 was put into effect in July 1942 the 55% was a reasonably satisfactory figure, for there was considerable usable machinery to be bought, the Engineers Corps com-

• **A high-grade of steam coal is being produced by the Victory Coal Company of Pittsburg, Kansas, on a 400,000-ton strip mining project three miles west of Cherokee. Coal is taken from a 15-inch seam with an overburden averaging 20 feet, which is removed with an 8-cu. yd. shovel. Truck loading operations have recently been greatly facilitated on this project by the use of a Bucyrus-Erie ¾-cu. yd. Dozershovel mounted on an International TD-9 diesel crawler tractor. As a unit, the Dozershovel's hydraulic control provides down pressures up to 4,200 pounds for digging bites into the seam of coal.**

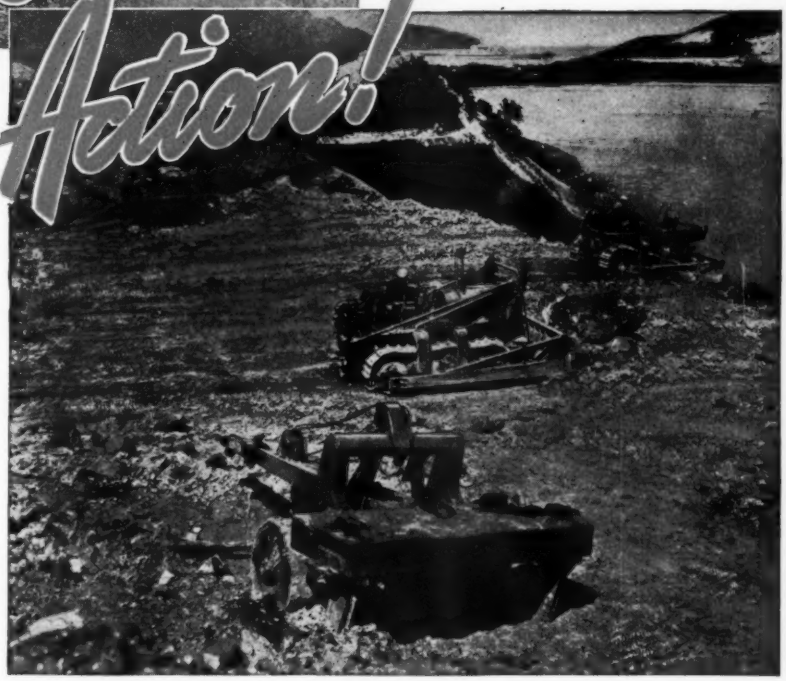
The Dozershovel is serving a fleet of six International trucks which are hauling an average of six tons of coal per three-mile trip to the grading plant. F. H. Freeto is president of Victory Coal Company and R. L. Hoppasis, superintendent.



◀ *Left:* YESTERDAY — 2-cycle Diesels helped rush through huge ordnance projects . . . shown here on one of the biggest!

Below: TODAY — Still going strong, these 2-cycle Diesel veterans push a mountain into the sea building a Pacific base.

Veterans—— back in Action!



They're at it again! They put in thousands of tough hours on the huge, home front construction program of the past several years . . . now the same 2-cycle Diesel tractors are handling even tougher going on overseas work for our Armed Forces.

Completely overhauled and repaired—much of it done by Allis-Chalmers dealers — there's plenty of service left in these fast-moving, powerful tractors. Today they are doing their part building advanced bases and helping reconstruct devastated areas.

2-cycle Diesel tractors are built to last . . . to perform faithfully for years with less attention. Moreover, they go right to work . . . *start instantly* — no waiting around for the engine to warm up. Lubricating truck wheels only once every 200 hours saves on greasing time, too!

The records that 2-cycle Diesel tractors have made and are making on giant defense projects and on the war fronts are your assurance they will stand up to any peace time job — no matter how tough. Figure on them for your Postwar construction.

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE • U.S.A.

• Bucyrus-Erie ¾-cu. yd. dragline is used by the Seabees leveling a flight strip in the Aleutians. Shovel front end is seen in the foreground. Hut and tents to the extreme left provide living quarters for the men.
Official U. S. Navy Photo.

peted for it on equal terms with other purchasers, and contractors were busy. Now, however, the picture has changed completely; there has been a great amount of recapture by the Services, the Engineers Corps has secured price relief from OPA for overseas machinery, the existing stocks in the country have suffered from attrition and contractors are idle. At the same time, the lumbering, mining, and farming requirements have vastly increased.

The Engineers Corps pay the 85% total price, less an estimated price for rebuilding; the seller receiving the balance for equipment "as is."

The present situation, the committee felt, is the unfortunate but logical consequence of ignoring these changed conditions.

First, the existing inventory of used equipment in the country is immobilized. Distributors do not buy because the cost of labor has risen so sharply that in many instances the 30 per cent differential is not enough to cover rebuilding as well as the freight. Contractors do not sell for several reasons which are bound up with the fact that the sale of their machinery in this period of idleness may preclude their taking future contracts. Some have good equipment and they cannot afford to sell it at 55 per cent now, only to spend much more than the proceeds to replace it in the future. Some have machinery of mixed quality, and selling the sought-after-pieces at 55 per cent would leave them with a useless collection which they would have to store. Others have poor equipment which is worth only 25 to 30 per cent but which they are holding for 55 per cent. In still other instances, contractors would be willing to sell except for the effect which the profit from the sale would have on their tax status. One committeeman explained that a contractor customer of his advised him that under the Department of Internal Revenue's "carry-over and carry-back" provisions, a continued lack of contracts would entitle him to a tax refund. In this contractor's case the tax brings the profit from sales at 55 per cent down to the vanishing point.

The retention of MPR-136 causes the very condition it was designed to prevent—inflation. It has become common practice for purchasers to buy machinery outright at 55% which machinery is actually worth much less. This has happened because the better machinery they preferred could not be sold for its true value because this value fell between 55% and 85%.

The retention of the 55-85 per cent relationship sometimes results in the wasting of man-hours and critical parts for unnecessary rebuilding of machinery which is in good enough condition to be sold between 55% and 85% "as is."

Committee Recommendation

The Committee unanimously recommended that MPR-136 be revised to:

Eliminate the 55% "as is" ceiling.

Retain the 85% as a maximum ceiling for used machinery equivalent to rebuilt and guaranteed equipment. No used construction machinery to sell for more than 85% in any case.

Eliminate all reference to freight. This will permit the ultimate purchaser to pay all actual freight without violating ceiling prices.

This change would result in open negotiation of prices up to 85 per cent. The committee said that the much-discussed sliding scale is a great improvement over the existing regulation but enforcement would be burdensome because many ageplates are lost from the older machines.

Increase Shipments of Hauling Scrapers

During 1943 shipments of hauling-type scrapers amounted to 5054. This represents a slight increase over the total of 5043 shipped in 1941, the largest number of any year for which comparable data are available. At the present time, approximately all scrapers manufactured are being purchased by the Military Agencies.

Hauling scrapers are two or four-wheeled and as a rule are tractor-drawn, although some models are self-propelled. Scrapers range in size from two to at least 30-cu. yds. carrying

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are carrying loads in all climes where off-the-highway operation is required.
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to keep the home soil FREE

Tapered Roller TIMKEN BEARING EQUIPPED

This is a peacetime photograph, taken on home soil under far happier conditions than those so many Bucyrus-Erie 4-Wheel Scrapers now are working under on the battlefronts of the world.

But wherever they are, these scrapers and their Timken Bearings are doing the same top-notch, dependable job they always have done; saving time for hard-pressed Seabees and army engineer crews; needing very little in the way of lubrication and maintenance.

The machine shown in the photograph is a Bucyrus-Erie Model S-90 4-Wheel Scraper equipped with a P-24 Bucyrus-Erie Power Control Unit — also equipped with Timken Bearings.

Someday — perhaps not far distant — these and other Bucyrus-Erie construction machines will return to peacetime work on a greater scale than ever before. The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

"BUY MORE THAN BEFORE 5TH WAR LOAN IN THE 5TH WAR LOAN"

• Allis-Chalmers tractors with Bucyrus - Erie four - wheel scrapers grading on the Trans-Isthmian highway near Rio Gatun, Panama.

capacity; however, the 8-cu. yd. size is the most common. The data in this release exclude drag, fresno, rotary scrapers, and hauling scrapers of less than two cubic yards capacity.

These data are based on reports representing 100% of the industry; in 1943, 12 companies reported while for the years 1937-1941, 19 companies reported.

(Number of Scrapers)

Year and Quarter	Shipments
1937—Total	967
1938—Total	1484
1939—Total	2353
1940—Total	3377
1941—Total	5043
1943—Total	5054
1942—4th	1190
1943—1st	1351
2nd	1497
3rd	1511
4th	695

A.G.C. Spring Meeting

The Spring meeting of the governing and advisory boards of The Associated General Contractors of America was held at the Drake Hotel, Chicago, May 29 and 30. Meetings of the executive committee and the A.G.C. Secretaries' Council were held May 28.

Pricing of Shovel Mounted on Motor Vehicle

A heavy-duty crane or shovel, designed for construction work and operated by independent power, and a used motor vehicle on which it is mounted may now be priced as one unit, providing the value of the crane or shovel is greater than the value of the used vehicle upon which it is mounted, the Office of Price Administration announced.

Previously, the used vehicle was priced under the regulation governing sales of used commercial motor vehicles, while the rest of the construction unit had to be priced under provisions of the regulation that would apply if the machinery were unattached.

To simplify pricing of this type of construction equipment, this action provides that the price for the entire unit (if the value of the crane or shovel is greater than the value of the vehicle) shall be priced under the machinery and parts regulation (MPR 136). The action is effective April 29, 1944.

In determining whether the value of the crane, or shovel, is higher than the value of the used vehicle, the prices to be used are:

(1) For the crane or shovel: The maximum price for the crane, or shovel, at the time of sale of the combination by the present seller.

(2) For the used vehicle: The maximum price, at the time of sale of the combination by the present seller, for the bare used vehicle as though it were standard and without any extras, alterations, or other improvements.

If the value of the used vehicle is higher than the value of the crane, or shovel, the pricing of the unit remains unchanged. That is, the used vehicle is priced under the used commercial motor vehicle regulation (RMPR 341) and the crane, or shovel, is priced under the machinery and parts regulation (MPR 136).

Start Stripping on Wyoming Coal Field

Big Horn Coal Company, Sheridan, Wyoming, has started stripping on a large tract 12 miles north of Sheridan. Proved coal deposits show that more than 1,000,000 tons can be mined. Officers of the company expect production of about 2,000 tons daily at peak operation. The Peter Kiewit Construction Company of Sheridan was awarded the contract for stripping the mine.

Oil-treated stoker coal is to be produced at a modern tipple and screening plant nearing completion on the main line of the Burlington railroad.

Alger W. Lonabaugh is president of the company; Harry Schwartz, vice-president; Glenn W. Hardy, secretary-treasurer, and George Nugent, superintendent in charge of operations.

Computing Overtime Labor With Rental Equipment

A specific method for computation of overtime labor costs for operating and maintenance services that are rendered in connection with the rental of construction and road maintenance equip-

Listen, wire rope users....
HAVE YOU TRIED TO GET TIGER BRAND...LATELY?
When America was plunged into war, we were asked to put practically our entire wire rope production at the service of Uncle Sam. For good wire rope, in enormous quantities, was urgently required for military use.
As a result, we have had to disappoint some of our customers. They were prompt to realize that it was not only a case of military necessity but to their ultimate advantage to stand aside for the time being. We are grateful for their cooperation.
Although enormous tonnages of Tiger Brand are still going to our fighting men and to our Allies, a steadily growing quantity is being made available for use here at home. So, when you need good wire rope, give us a call. The chances are becoming increasingly better that we may be able to supply you with your old favorite, American Tiger Brand—today even a better product because of its war service.
Excellay Preformed
AMERICAN TIGER BRAND WIRE ROPE AMERICAN STEEL & WIRE COMPANY
AMERICAN STEEL & WIRE COMPANY
Cleveland, Chicago and New York
COLUMBIA STEEL COMPANY
San Francisco
United States Steel Export Company, New York
USS
UNITED STATES STEEL

ment was announced by the Office of Price Administration.

This action, which became effective April 29, 1944, was taken to end uncertainty and doubt within the industry as to a method of computing the overtime labor costs, and to define the policy of the agency with regard to permissible additions that may be included in such charges.

The overtime labor charge that may be included in the maximum price for operating and maintenance services furnished in connection with the base rental of equipment is now explained by OPA as follows: ". . . there may be added the dollar amount of so much of the excess of actual overtime over actual straight time wages as is paid such operators or operating crews, plus payroll taxes and insurances, but not including mark-ups thereon."

In other words, the addition of "out-of-pocket" expenses, such as payroll taxes and insurance, may be included with the actual amount of overtime labor costs incurred; while any mark-up on the overtime charges is expressly excluded.

Formerly the provision governing the overtime labor costs that could be charged said: ". . . according to the method . . . used on March 31, 1942." By unrestricted use of that method, OPA pointed out, a mark-up for overhead and other factors could be included in the overtime charge.

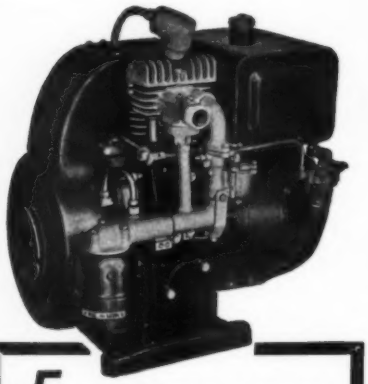
• The base of this new Bucyrus-Erie 1150-B dragline with walking traction mounting makes the men working on it look small. The 1150-B 25-cu. yd. dragline under which this base is used will have a walking speed of about 0.2 m.p.h.

Postwar Road Construction May Go to Next Congress

Federal postwar highway construction legislation may go over to the next Congress because of the sharp controversy created by the issue, it was declared April 25th by Chester Gray, director of the National Highway Users Conference, in an address before the transportation committee of the Rhode Island State Planning Board.

Gray said the pending federal legislation was so important in proposed cost and principles it would establish that it was being tested critically by the yardsticks of balanced state budgets and states' rights. Congress has become so cautious concerning it, he said, leaders of both parties in the House had demanded certain changes and continuance of hearings to give all interested groups an opportunity to be heard.

The legislation proposes a three-year postwar roadbuilding fund of $3,000,000,000 which would be allocated to the



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Descriptive literature sent promptly on request. D. W. ONAN & SONS, 3278 Royalston Ave., Minneapolis 5, Minn.

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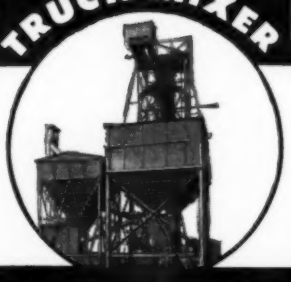

Erie builds a complete line of central concrete plants to keep truck mixers on the move.

Consult Erie now for the most modern of Post-war Plants.

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For one thing, you'll want to use the straight-line method—the continuous digging, lifting and loading by which a Haiss Loader delivers high speed loading capacity at such low cost.

For another thing you'll want mechanical reliability which has been the Haiss Loader's long suit from the very beginning. Simple, functional design, alloy steels, reliable power, heavy-duty clutches and gears—wholly enclosed and running in oil—and general low cost upkeep to which many hundreds of owners can bear witness.

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1. *That your loading equipment is of capacity to keep trucks from losing time at the loading point.*

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3. *That your Loader has weight, stamina, and reserve power—ability to do a big job and stand up to hard usage.*

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states and matched with state funds under a revised federal-aid formula.

Particularly critical examination of the plan was attributed by Gray to the following reasons:

1—A feeling in Congress that nobody knows what the national debt may be at the war's end and this may not be the time to lay down such plans.

2—That though one committee hearing witness said that highway user groups would not object to toll charges for road use if revised state budgets and increased state taxes did not yield enough for matching funds, the highway user groups actually have fought such practice for 15 years and would not tolerate it now.

3—That the legislation introduces unemployment relief as a new factor in federal highway planning, establishing a precedent that may be dangerous by inducing the federal government to undertake highway construction in every depression regardless of the need for the highways.

4—That this projects the social method of curing unemployment into highway building and ties the cost to the pocketbooks of one group of citizens, when the cost should be spread over all.

5—That those "who think that when Uncle Sam gets his toe in a crack of the door he tries to take charge of what is in the room beyond" are wondering whether the large sums that would be put into the hands of the Public Roads Administration might not transform it into a bureaucratic colossus capable of compelling states to raise taxes for matching purposes whether they want to or not.

6—That though it is argued, in support of changing the matching ratio from 50-50 to 75 per cent federal money and 25 per cent state money, that "Uncle Sam is a greater beneficiary of highway transportation than he was, including his postal service," some states may be more solvent than the United States if the war runs on.

7—Taxes are up and the consciousness grows that "everybody is close to Uncle Sam and everything they get out of his pocket they put in."

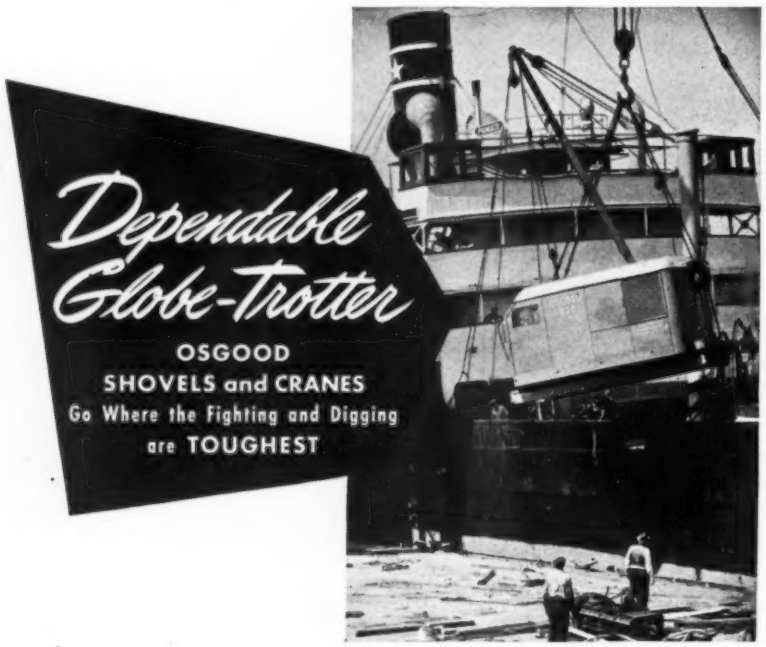
8—The revised allocation formula, from a basis of one-third each for state population, area and mileage, in proportion to U. S. totals, to one-half, one-fourth and one-fourth, gives the populous states more, even though they have been most guilty of diverting highway revenues to other uses.

9—Less populous states which waited long for the federal aid system to be built so they could get the secondary or feeder roads they wanted, are now faced with waiting for completion of the 35,000-mile interregional system, and "are getting their dander up."

10—By authorizing the use of federal funds for purchase of expensive rights of way, the legislation encourages further federal aggrandizement in contravention of states' rights.

11—The economic factor in the plan "hits every state official and planning board right between the eyes," so that if too much money is appropriated at Washington for the states to match without selling bonds or increasing taxes, highway users will ask: "Why add to the heaviest tax burden the average family has to bear?"

Asserting that the legislation was having a "terrific mauling" in committee, not because it was bad but because it was so important to many groups, Gray, who described himself as "an old lobbyist," said the situation was to him unique and intriguing.



Headed for the fighting front are another 48 tons of cargo that will "dig down" and pay its own passage anywhere.

In Italy, on New Guinea and Guadalcanal, from Alaska to South America . . . in every part of the globe where our combat forces need roads and construction, Osgood Shovels and Cranes are helping to clear the way to Victory.

Rugged, dependable, easy to handle and maneuver because of Osgood measured air control, these shovels, pile drivers, drag lines and cranes are doing outstanding work in *all* kinds of going . . . from rubble to rock.

Soon, thanks in part to their performance in this country and abroad, Osgoods again will be available to the construction field. Until that day, keep your dependable Osgood in action with preventive maintenance!

BUY ANOTHER WAR BOND TODAY!

THE GENERAL EXCAVATOR COMPANY
CRANES, DRAGLINES AND SHOVELS
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Lake Superior Iron Ore Shipments in 1943

Although the total 86,413,141 gross tons of iron ore sent from the different ranges of the Lake Superior region in 1943 did not come up to 1942's all-time record of 93,495,392 tons, it was ahead of the 1941 record of 81,210,606 tons. The 1943 figures include 84,396,980 tons shipped by lake and 2,016,161 tons shipped by rail.

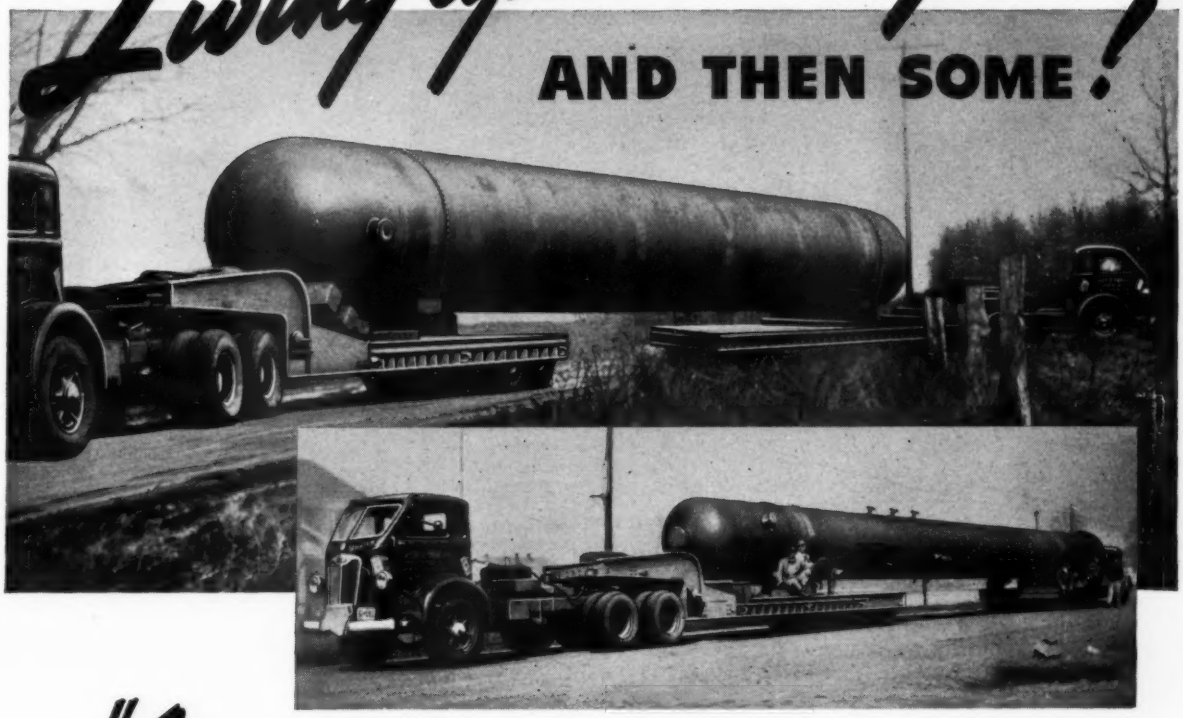
A new season of interlake navigation is again under way and iron ore scheduled by lake shipment in 1944 is 90,000,000 gross tons.

The 1943 shipments were from 178 mines. The average output per mine was 485,467 tons.

Several large companies accounted for the bulk of ore shipped in 1943. Oliver Iron Mining Co. was the leading producer with shipments equalling 46.3% of the total, which compares to 43.8% in 1942 and 42% in 1941. Pick-

Living up to a slogan—

AND THEN SOME!



"ANY LOAD THAT FITS THE ROAD!"

IS THE SLOGAN OF THE ARTHUR MORGAN TRUCKING COMPANY, ST. LOUIS, WHO SPECIALIZE IN MOVING HEAVY EQUIPMENT, AND DEPEND ON FRUEHAUF CARRYALLS FOR THIS WORK

But the Morgan people went beyond their slogan when they tackled the job of moving this huge gasoline cracking tank to the Illinois oil fields. For the big tank—weighing 100 tons—had to be hauled not only over the highway, but also through two miles of open fields to reach the job site.

The tank was loaded on two Fruehauf heavy-duty Carryalls, each coupled to a tractor. The combination unit had 52 wheels. Vehicles and load measured 128 feet long, 10 feet wide and 15 feet high.

Special permits were secured and the State Highway Patrol blocked out 10 miles of the Illinois State Highway while the load went through.

This is an unusual operation, of course, but it shows the adaptability of Fruehauf Carryalls to difficult, specialized hauling jobs that couldn't be handled by any other means.

Fruehauf Carryalls are built in a wide selection of sizes and designs. They range in capacity from 10 to 100 tons . . . are available in either semi or full-Trailer types . . . single or double-drop frame . . . side or rear loading . . . with 4 tires or up to 24 . . . in a variety of wheel and axle combinations . . . any width . . . any length . . . the applications to your special needs are endless.

There is no inclination to adjust your requirements to our product—because it is just as easy, and far more satisfactory, to fit our product exactly to your requirements.

Today is none too soon to have our engineers prepare the blueprints for your postwar Carryall. This costs you nothing extra—but it may save you weeks in the long run.

World's Largest Builders of Truck-Trailers

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Service in Principal Cities

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A TRUCK IS LIKE A HORSE — IT CAN PULL MORE THAN IT CAN CARRY

"Engineered Transportation"

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• A palm frond provides some shade for this Seabee operating a Bucyrus-Erie ½-cu. yd. shovel cutting down a hill in the South Pacific. *Official U. S. Navy Photo.*

ands, Mather & Company's percentage of 16% compares with 19.1% in 1942 and 20.1% in 1941. The Cleveland-Cliffs Iron Co., which has been third on the list of shippers since 1932, shipped 7.7% of the total for 1943.

The M. A. Hanna Company's percentage was 4.9% in 1943; Jones & Laughlin shipped 4.3%; Butler Brothers shipped 3.5%; Evergreen Mines, 3.3% and Republic Steel, 2.7%.

The Oliver Mining Company had an output of 39,990,557 tons from four ranges. It produced from 34 mines, 28 of which were on the Mesabi range. The Mesabi output of 38,189,426 tons accounted for 95% of the Mesabi's total and 59% of the total output of the Mesabi range in 1943. The company has several big pit operations on the Mesabi range. The Sellers Mine was credited with 8,118,010 tons; the Hull-Rust, 9,715,811 tons; the Burt-Day-Pool, which is part of the same pit, 586,432 tons, and the Penobscott, 1,001,096 tons.

Pickands, Mather & Co. is the only operator active on six ranges, the Mesabi, Menominee, Marquette, Gogebic, Vermillion and Cuyuna.

The leading operating companies, ranked according to their 1943 gross ton shipments, are as follows: Oliver Mining Company; Pickands, Mather & Co.; Cleveland-Cliffs Iron Co.; The M. A. Hanna Co.; Jones & Laughlin Steel Corp.; Butler Brothers; Evergreen Mines Co.; Republic Steel Corp.; Inland Steel Co.; Oglebay, Norton & Co.; North Range Mining Co.; Synder Mining Co.; Charleson Mining Co.; International Harvester Co.; Algoma Steel Corp.; Pittsburg Coke & Iron Co.; Argonne Ore Co.; Wheeling Steel Corp.; E. W. Coons Co.; Moore & Crago; Coates & Tweed; C. W. Moore Mining Co.; Carl Hedman & Co.; Globe Iron Co., and Jackson Iron & Steel Co.

Range shipments in 1943, number of companies and number of mines are as follows: Mesabi, 21 companies and 106 mines, 64,906,280 tons; Menominee, nine companies, 24 mines, 4,902,556 tons; Marquette, six companies, 16 mines, 5,601,418 tons; Gogebic, five companies, 13 mines, 5,486,918 tons; Vermillion, two companies, four mines and 1,779,014 tons; Cuyuna, five companies, 13 mines and 3,065,555 tons, and Fillmore County, one company, one mine and 220,427 tons.

Organize National Section of PAIMEG; Seek Members

A United States section of the Pan-American Institute of Mining Engineering and Geology (PAIMEG) was formed at a meeting in New York in April. The following were elected as a National Directorate: Edward Steidle, School of Mineral Industries, Pennsylvania State College, chairman; C. W. Wright, Chief Foreign Minerals Specialist, U. S. Bureau of Mines, vice-chairman; A. T. Ward, mining engineer, New York City, secretary-treasurer, and M. B. Gentry, vice-president of Freeport Sulphur Company, New York City; T. T. Read, School of Mines, Columbia University, and W. E. Milligan, department of metallurgy, Yale University, directors.

The organization is now open for charter members. Members of any mineral industries society in United States and Canada are eligible to join the National Section.

Union Wire Rope Backs Postwar Plans in Ads

The Union Wire Rope Corporation is giving industrial support for the Planned Postwar Program of the American Road Builders in a series of trade paper advertisements.

Believing that "every planned postwar program developed should be heavily backed by all industry in order to keep free enterprise free" the Union Wire Rope Corporation stated "if it is made to prevail the PPP of the American Road Builders Association will fend off a future WPA."

The Union Wire Rope Corporation

SAFE from Invasion is no idle boast today. The enemy has been driven from the Alaskan outposts and they dare not attack us here!

ROGERS TRAILERS have played a big part in fortifying our coastlines and they are fighting with our men overseas!

on ROGERS TRAILERS

The ROGERS TRAILERS which will be available to industry when present war contracts are completed, will be even better-engineered and more efficient than the thousands which have been operated so successfully for many years.

ROGERS BROS. CORPORATION
ALBION,
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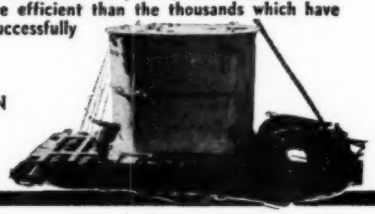


EXPERIENCE *Builds 'em* PERFORMANCE *sells 'em.*

TYPICAL DIESEL LUBRICATION PROBLEMS:

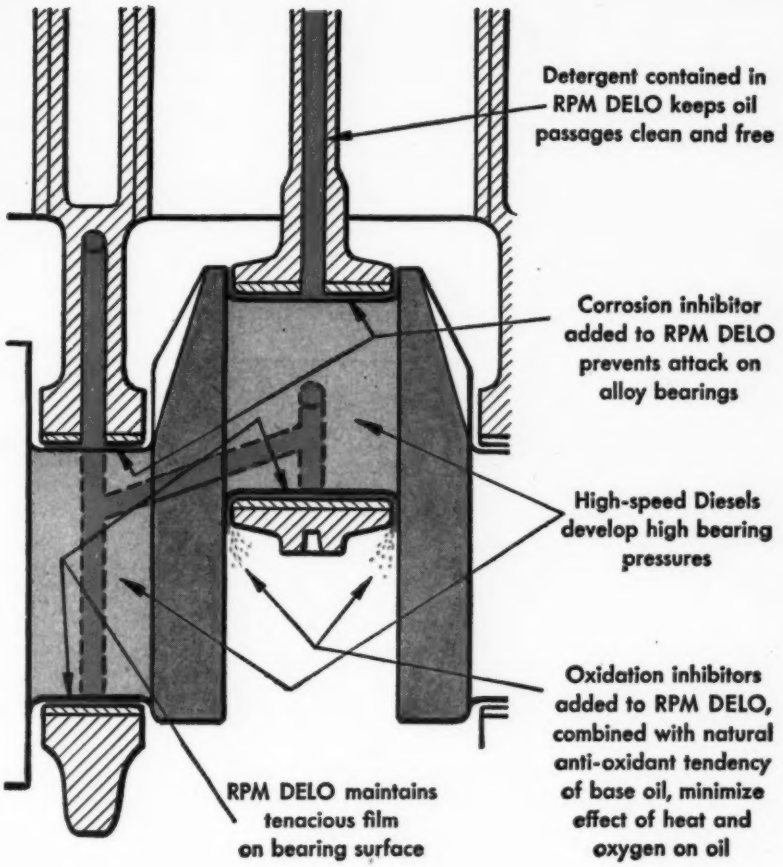
2. Bearing Corrosion

The high speeds of automotive Diesel engines have increased the loads on bearings to such an extent that copper-lead and other alloy bearings are widely used. These bearings, although able to withstand far greater pressures and higher temperatures than the conventional babbitt type, are subject to corrosion.

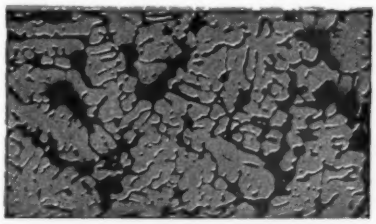
These same conditions of pressure and temperature promote a reaction between the lubricating oil and the air in the crankcase. When a hydrocarbon lubricating oil is exposed to oxygen at elevated temperatures, the oxygen atoms combine with the oil molecules. With some lubricating oils, this reaction causes them to become corrosive.

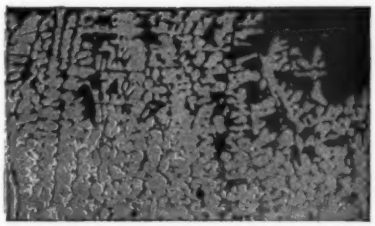
The products formed in this reaction tend to dissolve the lead in the copper-lead structure of the bearing, leaving a porous copper shell which breaks down under pressure.

This tendency, which presents a serious problem to operators of high-speed Diesels, can be entirely overcome through use of RPM DELO in accordance with the recommended procedure.


Detergent contained in RPM DELO keeps oil passages clean and free
Corrosion inhibitor added to RPM DELO prevents attack on alloy bearings
High-speed Diesels develop high bearing pressures
Oxidation inhibitors added to RPM DELO, combined with natural anti-oxidant tendency of base oil, minimize effect of heat and oxygen on oil
RPM DELO maintains tenacious film on bearing surface

Diagrammatic sketch of connecting rod and crankshaft bearing assembly illustrates one section of engine where RPM DELO reduces overhaul and repair expense.





Top Photo: A photomicrographic cross-section shows the lead component of a new copper-lead bearing in light grey. The copper is shown as red. Note the even distribution throughout.

Bottom Photo: A similar cross-section corroded by use of straight, uncompounded mineral oil. Note how lead has been eaten from surface, leaving copper honeycomb.

RPM DELO, in addition to its other properties, prevents bearing corrosion in three separate ways:

1. The base stock of RPM DELO contains natural inhibitors which are highly resistant to oxygen, and minimize the original tendency of all mineral oils to oxidize under heavy-duty conditions.

2. A powerful oxidation inhibitor is added to RPM DELO, which further reduces the rate at which the oil absorbes oxygen.

3. Direct protection is given to the bearing by the corrosion inhibitor added to RPM DELO.

Even more important than its non-corrosive property, is the ability of RPM DELO to eliminate ring-sticking, prevent excessive deposits on rings and ports, and minimize ring and cylinder wear.

RPM DELO has world-wide distribution and is marketed under the following names: RPM DELO, Caltex RPM DELO, Kyso RPM DELO, Signal RPM DELO, Sohio RPM DELO, and Imperial RPM DELO (concentrate). Ask your Diesel engine manufacturer or distributor for the RPM DELO supplier in your vicinity.

RPM DELO

STANDARD OF CALIFORNIA

ad series was prepared and placed by R. J. Potts-Calkins & Holden Advertising Agency of Kansas City.

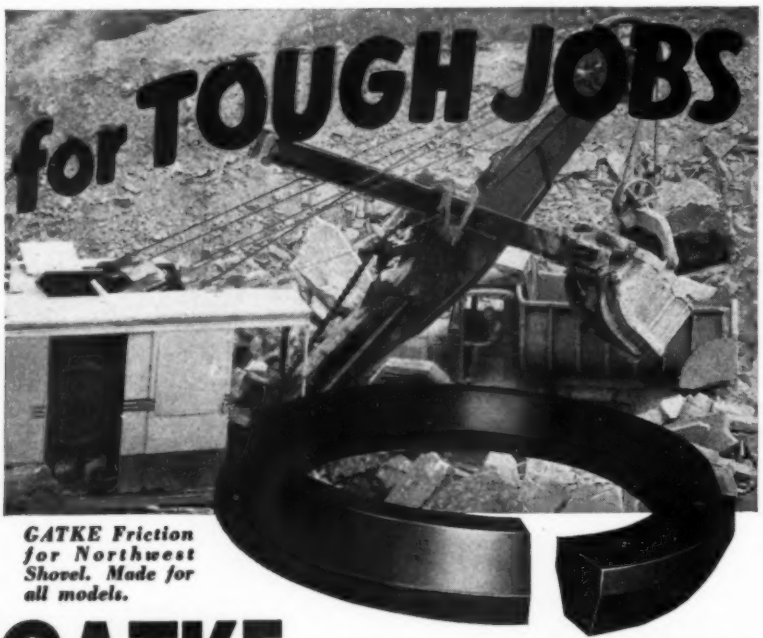
Traux-Traer to Open New Mine in North Dakota

Construction of a 6½-mile spur track is planned by the Northern Pacific Railroad to a new 20-million ton lignite coal field in west central North Dakota. According to railroad engineers, the spur project and extensive switching trackage to be built by the mining company at the field and at Hazen will cost about $300,000. Track work will start as soon as weather permits and is scheduled to be completed by next fall when the new mine will open.

Officials of the Traux-Traer Coal Company, field owner, estimate that approximately 250,000 tons of coal will be taken out the first year of operation, and 500,000 tons a year thereafter. Output of the new field will be largely utilized by industries in North Dakota and western Minnesota.

Osgood Used on Construction of China's New Ledo Road

One of two power shovels loading sand into trucks for the construction of China's new Ledo road, pictured on page 248 of the May issue, was mistakenly identified as a Buckeye. This shovel is an Osgood. The other shovel pictured was correctly identified as a Bucyrus-Erie.



GATKE Friction for Northwest Shovel. Made for all models.

GATKE SWING FRICTIONS

Other GATKE PRODUCTS

Brake Lining and Clutch Facings for all requirements of Shovels, Drag Lines, Cranes, Hoists, Trucks, Tractors, Trailers, and all kinds of Road Building, Excavating and Construction Equipment.

Non-Metallic Bearings for replacement service. Engineered for the application and moulded to machined accuracy in all shapes and sizes. Send for bulletin.

Whether it's loading rock or spotting pipe—*whatever the service GATKE Frictions give you TOP results.*

***Smooth, positive control* for effortless operation with speed and accuracy.**

***Plenty of power* for every job with no letdown when things get hot.**

***Tremendous wear resistance* gives months of service between adjustments.**

Seconds saved on every move add up to greater production for getting the job done ahead of schedule.

Whatever your equipment or service, just tell us what you need.

GATKE CORPORATION
232 N. LaSalle St. Chicago 1, Ill.

OBITUARIES

WILLIAM A. DAFOE

William A. Dafoe, 70, who retired as a salesman for the Clyde Equipment Company in 1943 died at his residence in Seattle, Washington, on May 4.

Mr. Dafoe was born in Farrans Point, Ontario, Canada, in 1873. He started in the excavating industry in the field as a craneman on a shovel and later was a shovel runner. In 1923 he joined Bucyrus-Erie in the Northwest Sales Office at Portland, Oregon, and two years later, when Clyde Equipment Company of Portland and Seattle took over Bucyrus-Erie distribution in that territory, Mr. Dafoe went with that company.

Mr. Dafoe is survived by his widow, Grace, and two sons, William L. Dafoe, a Seattle attorney, and Lt. (jg) Leslie Dafoe, U. S. Navy in California.

P. W. BLANCHARD

Palmer W. Blanchard, 51, president of Blanchard Brothers Construction Company and a resident of Denver many years, died on April 28 after a short illness.

Born in Creston, Iowa, he came to Denver as a youth, and following the completion of his education, joined with his brothers in launching the construction firm bearing his name. Many of the highways of Colorado and Wyoming were built by this firm.

At the time of his death, Mr. Blanchard was a member of the Executive Committee of the Colorado Contractors Association, an affiliated chapter of the Associated General Contractors of America, and at one time, while a resident of Cheyenne, was president of the Wyoming A.G.C. Chapter.

Positive Control FOR ACCURATE SPOTTING

DEPEND ON YOUR KOEHRING DISTRIBUTOR
to help you keep your equipment operating. Care for your Koehring equipment *NOW*, so it will serve you tomorrow. Koehring distributors have genuine Koehring parts. Koehring parts warehouses are at your service.

Independent Boom Control . . .

saves seconds on material handling work. Independent boom control permits accurate handling of piling for high speed pile driving on bridge and building construction projects. Raising or lowering the boom while swinging or traveling is a second-saving feature. Koehring Cranes are high speed, easy handling, have accurate and positive control. The many time-saving advantages of Koehring means speed on the job, more work per shift, less man power . . . waste motion is reduced to a minimum, every move is a production move.

KOEHRING COMPANY
Milwaukee 10, Wisconsin

ARMY E NAVY

KOEHRING HEAVY DUTY

HEAVY-DUTY CONSTRUCTION EQUIPMENT

Equipment you ought to KNOW ABOUT

New Overlay Metal

Manufacturer: Kerk-Aloy Com-Bloomington, Indiana.

Claims: Under laboratory tests this overlay metal has exhibited unusual qualities of hardness, resistance to wear, thermal conductivity, low melting point, stability of temper, low friction and is easily applied. It has evidenced a marked ability to bond homogeneously with any metal (except lead and aluminum); increasing its value to industry.

Kerk-Aloy can be applied with an acetylene torch, or an electric arc, does not require the use of bonding fluxes and flows evenly without gasification.

Truck Crane

Manufacturer: Harnischfeger Corp., Milwaukee, Wis.

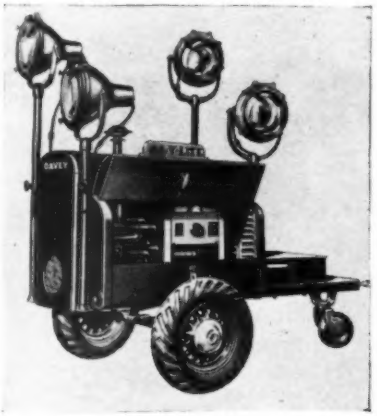
Claims: A new, heavy duty P&H truck crane with a carrier built for crane work and not for crane transportation alone. Lower center of gravity gives greater stability in terms of hoisting capacity and boom reach, without the use of outriggers. With outriggers, working range is proportionately increased, and, being built closer to the ground, outriggers require little blocking.

The usual problem of sway at the boom point is markedly lessened by a new weave-proof frame of all-welded box section construction with a built-in torsional bar.

The crane machinery is standard P&H Model 225-A crane upper, complete with P&H low pressure, direct acting hydraulic control and triple-safe planetary boom hoist, which prevents the boom from falling suddenly. The entire unit is within standard road clearances, and its comparatively short wheelbase allows greater maneuverability on the highway, as well as on the job. Tractive power is by double drive axles in tandem — low range transmission with 10 speeds forward and two reverse.

The unit is recommended for all types of materials handling work and can be equipped with hook, clamshell, magnet, dragline, etc.

For further details about the equipment on these pages please write to the manufacturer, mentioning Excavating Engineer.



Portable Light Unit

Manufacturer: Davey Compressor Co., Kent, Ohio.

Claims: The Da-V-Lite portable light and power unit is available in four models, any of which may be obtained with either skid mounting or spring mounted on two wheels. A heavy-duty, four-cylinder, V-type, air-cooled engine operates a Westinghouse single-phase, 60-cycle, 120-volt generator delivering 5 kw for lighting or power.

"Floodlight Model" is designed to work-light a large area: four 16" Westinghouse floodlights of 35,000 candlepower each are individually operated from control panel and are adjustable in all directions. They may be raised to a height of nine feet if desired.

"Searchlight Model" is for intense lighting on smaller areas or for projecting light a considerable distance, and is equipped with two 18" Westinghouse searchlights of 1,935,000 candlepower each. "Standard Combination Model" provides two 16" and two 18" lights, and "Beacon Model," for directional lighting is equipped with one 24" searchlight of 11,280,000 candlepower.

Kennametal File

Manufacturer: Kennametal, Inc., Latrobe, Pennsylvania.

Claims: A new and revolutionary type of file made of hard, high strength cemented carbide compositions. Extended service trials have demonstrated that the new file will permit filing speeds of three to ten times that possible with steel files, and outlast them 50 to 200 times. It will cut steels of a hardness up to 62 Rockell C, and does a noteworthy job on cast iron and brass at surface speeds around 900 feet per minute. This file, available at the present in only one size, is 11 inches long, ¾-inches wide, and ⅜-inches thick.

Four-Speed Reversing Controller

Manufacturer: The Elwell-Parker Electric Company, Cleveland, Ohio.

Claims: Improved economy in current consumption is indicated as a significant feature of the new M-79 Simplified Four-speed Reversing Controller for electric and gas-electric trucks manufactured by the Elwell-Parker Electric Company. The major portion of possible loss of current when motor current is restricted by introducing resistance on first, second and third speeds, and running the truck for protracted periods on any of these three speeds, is prevented by the M-79 Controller, which uses resistance on the first speed only. An additional power saving is attributed to the manipulation of the motor fields, connecting them in series on first and second speeds, which produces greater torque with less current consumption.

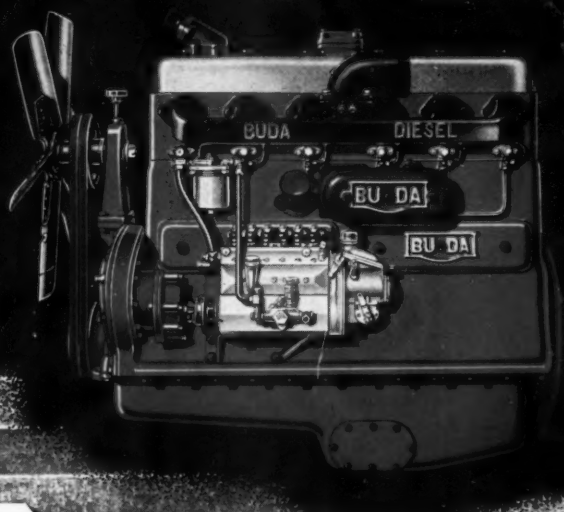
Power...

precedes progress

Chain pump used in mining districts during the 16th Century.

Bettmann Archives

BUDA
Service is
Nation-Wide



Proof that BUDA "Low Pressure" Diesel engines deliver steady, reliable, economical power, month after month, is found in their years of dependable service. For lower operating and maintenance costs, less down time and longer engine life — specify BUDA - Power.

Write for bulletin.

NAVY

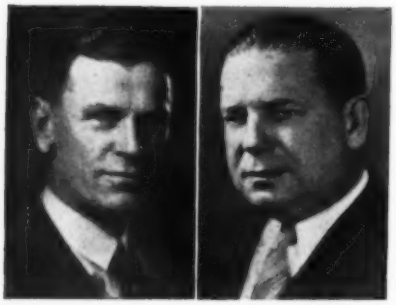
BUDA

HARVEY (Chicago Suburb) ILLINOIS

Notes from the manufacturers

International Harvester Company of Chicago, Ill., announces, as part of planning, in the belief that both wartime and postwar operations will benefit, the creation of operating divisions having a large degree of independent authority and responsibility.

Effective March 1, 1944, the Industrial Power Division, with H. T. Reishus as general manager, assumed direction of and responsibility for the Harvester Company's entire industrial power business. Other divisions now in operation are the motor truck, farm tractor, farm implement, steel and fibre and twine divisions.



H. T. Reishus Neal Higgins

A division in the Harvester Company is a new unit, differing from a department in that a department deals with only one function, such as engineering or sales, whereas a division is a group of departments, each of which is engaged in its own functions but all of which are concerned with the same product or group of products.

There are two kinds of divisions in the organization. A complete division contains a manager of sales and a selling organization under him. A partial division will have no sales group but will "sell" its entire output to a general line sales department.

The Industrial Power Division is a complete division with its own sales organization headed by Neal Higgins as manager of sales and G. A. Gilbertson and W. M. Parrish as assistant sales manager.

The head of each division is a general manager who reports directly to the president. The general manager has under him as department heads managers of engineering, manufacturing, supply and inventory, a divisional comptroller, and, in the case of complete divisions, a manager of sales.

The change to a divisional form of organization was decided upon after careful consideration, for the following purposes:

1—(a) To reduce the number of operating responsibilities carried by higher executives, giving them more time for policy formation and forward-looking planning, and (b) to accomplish the desirable result of placing more responsibility and authority in positions closer to the operating levels.

2—To provide a form of organization which will enable representatives of different functions to work more closely together in the interests of some particular product or group of products.

3—To encourage the development of a larger group of capable and experienced major executives.

Managers in the Industrial Power Division, in addition to Higgins, include: D. B. Baker, engineering; H. B. Rose, manufacturing; W. M. Holland, supply and inventory; and M. L. Allen, divisional comptroller.

The sales department will function under Higgins, with the two assistant sales managers, and R. C. Flodin as assistant to the manager.

The United States has been divided into zones under zone managers. These men, who will contact distributors and dealers, are under Gilbertson. The latter will also maintain relations with contacting and servicing branches of the Company.

Mr. Parrish, as in the past, will contact manufacturers in the direct sale of International industrial power.

W. W. Black, who has worked with International distributors and branches on industrial power service, is supervisor of the service and parts section.

Sales engineering, which also includes allied equipment and modified units, is under supervision of E. A. Braker.

The Company's large Tractor Works in Chicago and Milwaukee Works in Milwaukee are the industrial power division plants. J. W. Phillips is general superintendent of Tractor Works, and R. E. Bloye has the same position at Milwaukee Works.

The Harvester Company believes that the improvements which have been made in the form of organization will be reflected in such ways as acceleration in the design of new and improved products, increased manufacturing efficiency, and better distribution of products, to the mutual benefit of customers, distributors, dealers, and the Company.

The Buda Company, Harvey, Ill., which has been involved almost 100% in the War effort for the last four years was awarded the Army-Navy "E" Flag for excellence in production.

R. G. LeTourneau, Peoria, Ill., announces that seven more distributors, bringing the total number to date to 14, have been signed under the company's new sales policy.

The newest list includes R. E. Brooks Co. of New York City; Furnival-Rimmer Co. of Philadelphia; Dravo-Doyle Co. of Pittsburgh; Costello Equipment Co. of Calgary; Chicago Construction Equipment Co. of Chicago; Parker-Donner Co. of Hyde Park, Mass., and Miller-Hasselbalch Co. of Omaha.

Independent Pneumatic Tool Company, Chicago 6, Ill., announces the appointment of Edward N. Haas as works manager of the Aurora, Ill., plant to succeed W. H. Brewer who has been named general factory manager. John P. Bank succeeds Haas as assistant works manager.

Buckeye Traction Ditcher Company, Findlay, Ohio, announces the appointment of A. M. Guthrie as field sales manager. He has been Eastern district manager since 1940.

Timken Roller Bearing Company, Canton, 6, Ohio, announces that Walter G. Hildorf, who recently became director of metallurgy, is first to occupy the newly created office. He was formerly Timken's chief metallurgical engineer, a position now held by Ralph L. Wilson.

Fruehauf Trailer Company, Detroit, Mich., announces the return to the Chicago branch of Ray D. Mains, sales manager, who for the past year has been handling an assignment at Fruehauf's Washington office as special assistant to Roy A. Fruehauf, executive vice-president of the company.

Gar Wood Industries, Inc., Detroit, Michigan, announce that W. H. Hammond, vice-president and director of branches, has assigned Ross Miller to the Hoist and Body Sales Department for the duration.

New trade literature

Title: **"Wire Rope Sling Catalog"**

Subject: Data on wire rope and grommet slings for both standard and special uses—also new Roebling "flat-weave" sling. In addition to recommended safe loads and size ranges, the book is profusely illustrated with application pictures of slings in actual service. A section of the book is devoted to the various types of wire rope fittings used in connection with slings.

Where to Get: John A. Roebling's Sons Company, 640 S. Broad St., Trenton 2, N. J. (Free).

Title: **"Industrial Jack Catalog"**

Subject: Sixty-page catalog and manual of Simplex Lever, screw and hydraulic jacks. Pictures, descriptions, dimensions, capacities and weights of hundreds of jacks in sizes from 3 to 100 tons capacity. Also contains operating and maintenance instructions on all types of industrial jacks. Feature pages show jacks in war applications and lists of jacks by types for ready reference.

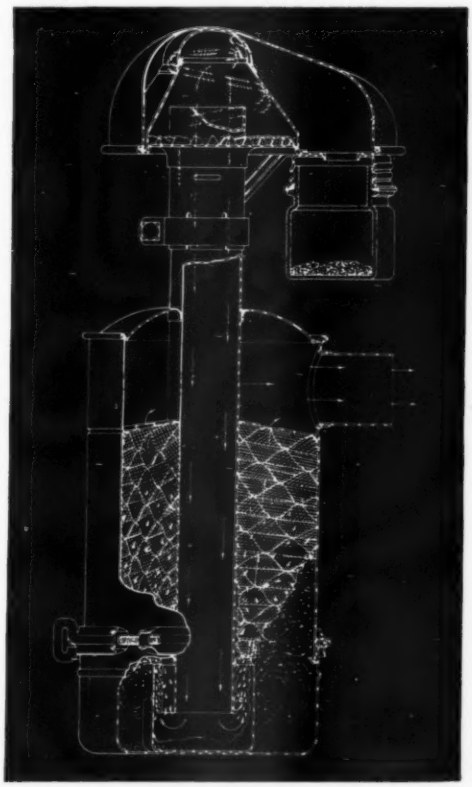
Where to Get: Templeton-Kenly & Co.,

(Continued on page 335)

DONALDSON
Oil-Washed
AIR CLEANERS

Note These DONALDSON Features

1. **Non-plugging element: Manufactured from lead-coated wire. Open area of element pre-determined and can be uniformly controlled in manufacture.**
2. **Cleaning is done by scrubbing: The element functions as a condensing chamber . . . not as a filter . . . thereby minimizing the possibilities of dirt becoming lodged in the element.**
3. **Ease of service: Under normal operating conditions, cleaning and servicing of the oil cups is all that is required.**



4. **Submerged air inlet insures displacement of oil and high cleaning efficiency regardless of load or operating speed.**
5. **One hundred per cent pressure tested.**
6. **For extreme dust conditions pre-cleaners can be provided to increase the time between service periods.**

Our engineers will be glad to help YOU work out the best Donaldson installation for your product. Write us . . . no obligation.

DONALDSON CO., INC.
666 Pelham Blvd., St. Paul, Minn.

HAYWARD BUCKETS

GOOD FOR YEARS OF HARD SERVICE

A HAYWARD Bucket is an investment, not a gamble. It helps you make a profit on every job.

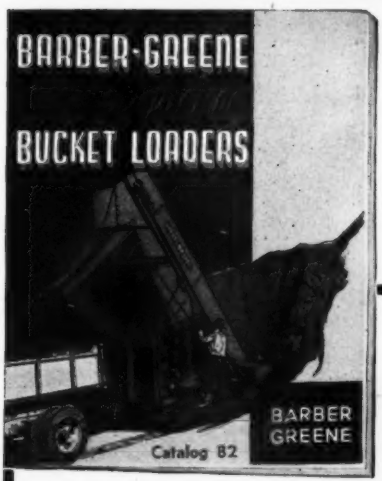
THE HAYWARD COMPANY
52-54 Church Street
New York, N. Y.

NEED A BIG Trailer?

La Crosse Makes Them Up To 200 Ton Capacity

WRITE OR WIRE

LA CROSSE TRAILER & EQUIPT. CO.
LA CROSSE, WISCONSIN U.S.A.



★

YOUR COPY IS READY

O-82

34 JOB PHOTOGRAPHS

The new Barber-Greene Bucket Loader Catalog 82 shows 34 photos of B-G Loaders saving time and money on different types of work including: truck loading from stock piles, road shoulder cleanup, top soil stripping, reclaiming, screening, loading scarified base, etc. Also specifications and accessories. Write for your copy.

BARBER GREENE
AURORA ILLINOIS

FIELD NOTES

(Continued from page 306)

sary hazards which cause delays by frequent failure of welds.

All of the above objections and faults have been eliminated by development of the new "one piece combination drill stem and open side swivel socket." This tool is made from a solid bar of high carbon steel with the swivel socket as an integral part of the stem. The diameter is equal to or larger than standard box collar size to conform with the diameter of the hole to be drilled. The length is variable to suit maximum weight of tools which machine capacity can handle.

The "one piece combination drill stem and open side swivel socket" has no four sided wrench squares but is milled flat to receive the tool wrench near the bottom end for changing bits. The surface is smooth with no shoulders or offsets to catch on tool guides, or drag on walls of drill hole. No wrench square is provided at the top end because the socket is a part of the tool and there is no box and pin joint to be broken with wrenches. A hole is drilled through the stem below the swivel socket into which a bar can be inserted to rest tools on collar of drill hole while changing cable in socket mandrel or while inspecting portion of cable which works inside the neck of the swivel socket.

On this improved tool the large diameter bar is more rigid and so resists deflection or vibration and the tool runs with less whipping against the side walls of the hole and has a better "follow through" blow on the penetrating edge of the bit.

There are no forge welds in the "one piece" combination tool and the character of the high carbon steel permits flame hardening of the finished shoulder on the box end which greatly increases length of service and reduces wear to a minimum.

This modern design of combination tool has been thoroughly tested in some of the largest mines and without exception has increased footage wherever it was used.

It is quite safe to estimate increased footage in direct proportion to increased weight of drilling tools when the new combination tool replaces the old style drill stem and rope socket.

The new combination tool costs less per pound than the old style tools and wherever tool weight can be increased 15% or more the additional footage will pay for the new tools in less than 60 shifts and continue to pay at the rate of 100% on the investment every 60 shifts thereafter.

To determine the value of increase in footage which may be expected from any blast hole drill, a time study should be made and cost figures set up on the basis of eight-hour shifts, including the following items:

Items	Estimated Cost
Driller's wages	$ 8.00
Helper's wages	6.00
Bit sharpening	3.00
Transportation of bits	1.00
Dissipation of bit steel	.45
Water supply	.50
Supervision	1.00
Depreciation of machinery	2.00
Insurance and tax	1.00
Repairs and maintenance	.55
Dissipation of cable	.50
Total	$24.00

On this basis 15% more footage means a saving of $3.60 per shift for one drill. A battery of drills operating two or three shifts runs this little saving up to a sum which should interest the operators of any mine or quarry.

No. of Drills	SAVINGS 1 Shift	2 Shifts	3 Shifts
1	$ 3.60	$ 7.20	$ 10.80
2	7.20	14.40	21.60
3	10.80	21.60	32.40
4	14.40	28.80	43.20
5	18.00	36.00	54.00
6	21.60	43.20	64.80
7	25.20	50.40	75.60
8	28.80	57.60	86.40
9	32.40	64.80	97.20
10	36.00	72.00	108.00

Into Action!

TODAY our entire facilities are devoted to creating one main headline —"WAR IS OVER — ENEMY SURRENDERS"! The faster we can get needed equipment to the fighting areas, the sooner that headline will appear.

After that — there will be many more tomorrows when "HERCULES" (Red-Strand) Wire Rope will again play its leading part in peace-time production and pursuits. For long service and economical performances include it in your post-war planning.

Meanwhile . . . *your* wire rope will last longer if given proper care.

MADE ONLY BY
A. LESCHEN & SONS ROPE CO.
WIRE ROPE MAKERS — ESTABLISHED 1857
5909 KENNERLY AVENUE — ST. LOUIS, MISSOURI, U. S. A.

NEW YORK • • • 90 West Street
CHICAGO • • 810 W. Washington Blvd.
DENVER • • • 1554 Wazee Street
SAN FRANCISCO • • 520 Fourth Street
PORTLAND • • 914 N. W. 14th Avenue
SEATTLE • • 3410 First Avenue South

NOT in the *Contract*

A sweet young gal breezed into a florist shop and looked over the shelves for something she wanted. Then she saw an old chap puttering over a plant in the corner and went over to him.

"Have you any Passion Poppy?" she inquired.

The old boy looked up in surprise.

"Gol ding it!" he exclaimed. "You just wait 'til I get through prunin' this lily."

"Iss potatoes in two kinds, male and fimmale?"

"Of course not. Why?"

"It's werry fonny—the Keptin's telling me I should peel two sex of potatoes."

And then spring reminds us of the story about Mrs. Newrich who was fond of flowers and especially liked the Salvia, but was not very reliable in getting her names right. She was giving directions to her gardener.

"On the side of the walk," she said, "I want you to put out some salivas. Now what would you suggest for the other side?"

"Well, madam," replied the gardener solemnly, "Maybe it would be a good idea to put some spitoonias there."

Fan Dancer: "Doctor, I want you to vaccinate me where it won't show."

Doc: "Okay! Stick out your tongue."

Traveling on a bus at night, a nosey lady observed that the driver was a healthy-looking young man. She leaned over his shoulder and said, "Why aren't you in the army?" He turned his head and replied in a very polite voice, "My eyes are so bad I can't see." The lady immediately asked, "Why do they let you drive a bus if your eyes are so bad?" The driver said, "Oh, they only let me drive at night when there is nothing to see anyway."

Cat Skinner: "Is it true that you soldiers are interested only in wine, women and song?"

Sergeant: "Naw. It's darn seldom you ever hear any singing in our outfit."

Overheard in the bureau of naturalization:

"Where is Washington?"

"He's dead."

"I mean the capitol of the United States."

"They loaned it to Europe."

"Do you promise to support the Constitution?"

"How can I? I have a wife and six kids."

A contractor met his buddy, another contractor, on the street, all bedecked in Army regalia. "Why Joe," he said, "What are you doing in the Army—they need men like you in the airport construction business."

"Well," replied Joe, "in the first place I wanted to build myself up physically; in the second place, I wanted to do something for my country, and in the third place, they came and got me."

Englishman: "I say, what are they doing?"

American: "They're dancing."

Englishman: "They get married later, don't they?"

Drill Sergeant to soldier: "Wipe that opinion off your face!"

A shovel runner sat down at a lunch counter and ordered four fried eggs, a dozen oysters, a grilled steak and a double order of French fried potatoes.

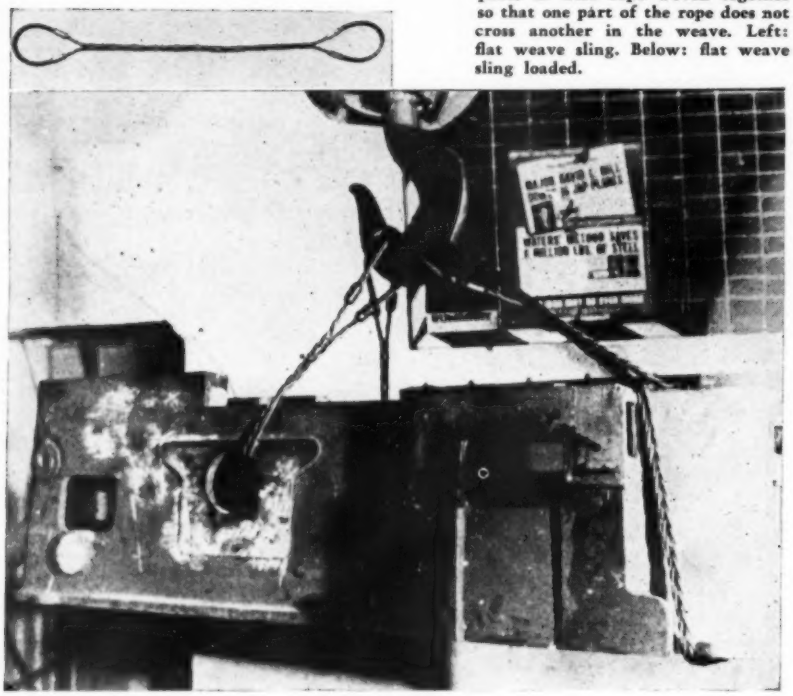
After wading through these he polished off with six doughnuts, two pieces of pie and three cups of coffee.

When the waiter had finished serving, he remarked, "You must enjoy your meals."

"Far from it," replied the shovel runner, "as a matter of fact, I hate 'em—but I am nuts about bicarbonate of soda."

Heard on the beach: "My goodness, isn't that Fanny Brown over there?"

"That big baboon — he never lets you forget it, does he?"



● A flat weave sling is made of six parts of wire rope woven together so that one part of the rope does not cross another in the weave. Left: flat weave sling. Below: flat weave sling loaded.

Wire Rope . . .

(Continued from page 295)

hand in the form of a wire rope, as its main member. A grommet type of sling is a very precise product and brings into play the strength and reliability of a number of wires wound around a number of times to complete the whole.

The grommet sling has the advantage of placing the fittings in compression and having only the grommet itself as the real tension member. This is the case because the grommet is designed to go completely around the load and around the crane hook as well, and by keeping the cast or forged fittings in compression and having only the wire rope in tension, an additional safety feature is provided.

A third type of sling which we call a Flat Weave Sling, is made of six parts of wire rope woven together. The weave of the sling is made so that one part of the rope does not cross another, and as a result, shearing actions within the sling itself are avoided. This same feature enables the component parts of the sling to become adjusted under load so that each takes its proper share of the load. This type of sling is best adapted to handling light or medium loads. It is very flexible, and being flat, does not kink or become set as readily as round rope or grommet slings when used around sharp corners.

Flat weave slings can be adapted with ease to intricate shapes where otherwise entirely special and more costly slings would have to be employed.

One of the most important factors to be kept in mind in regard to a safe operation of wire rope, grommet, or flat weave slings is that the sling be of proper design and of sufficient strength to satisfactorily handle the load. In the design, consideration must be given not only to the magnitude of the load but to the angle the rope must make to the horizontal. If the maximum safe load for a sling used vertically were ten tons, the safe load for the same sling with legs at a 45° angle with the horizontal would be only seven tons. Were this angle reduced to 30°, the safe load would be only five tons. It is, therefore, desirable in designing and using a sling, to keep this angle as large as possible, and it is important not to use any sling to lift a heavier load than that for which it is intended, or to use it with the rope making an angle smaller than that for which it was designed.

Wire Rope Lubrication

To return to operating ropes, there are many factors we might mention in regard to the installation and maintenance of wire rope. However, these points are continually being stressed by wire rope manufacturers and are familiar to those who handle the product. We can omit this part of the story with the exception of one very important factor—the lubrication of wire rope.

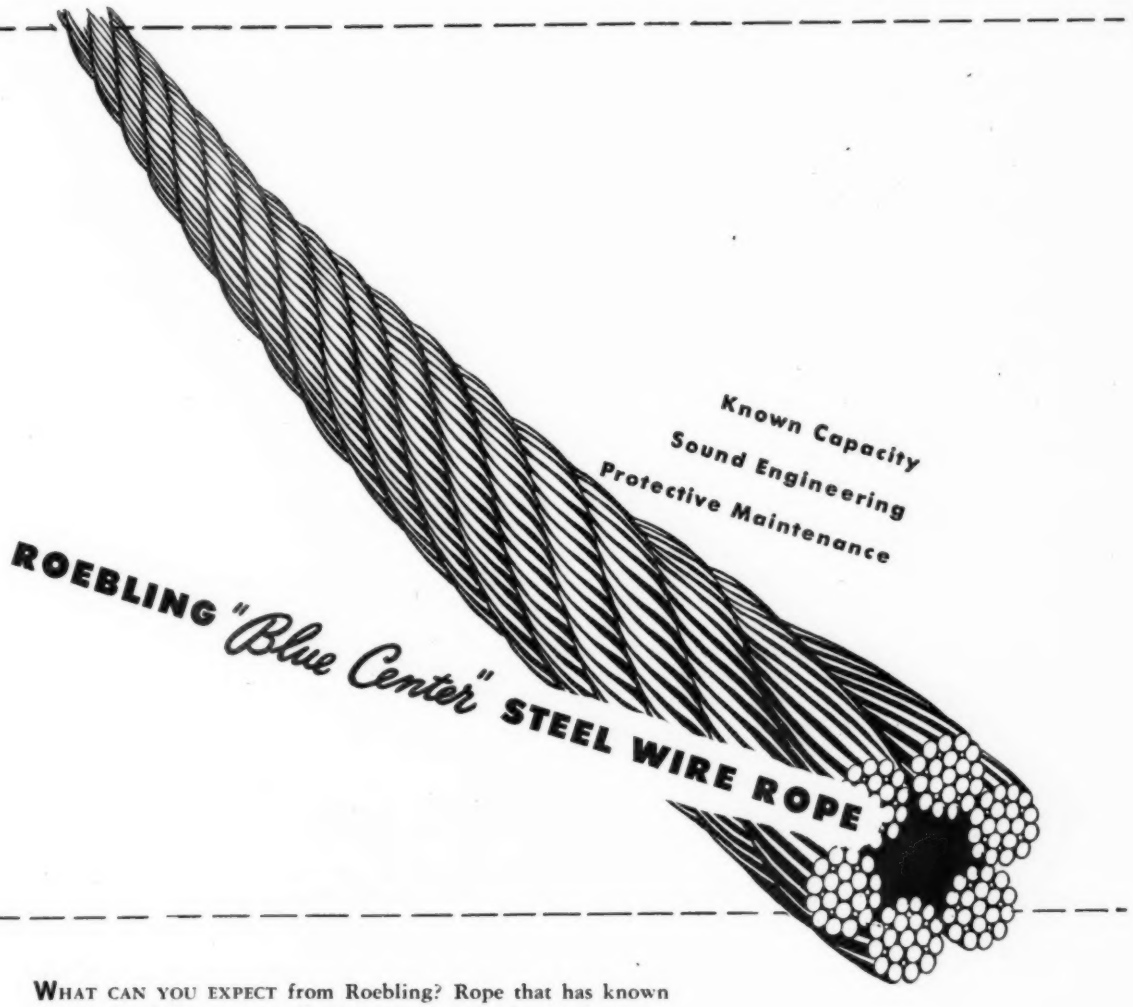
All wire rope is lubricated at the time it is made, but this lubricant cannot last the entire life of the rope since weather exposures and the kneading action of the rope as it passes over sheaves and drums tend to wash away and squeeze out this original lubricant. Replenishing the lubricant is, therefore, necessary not only to protect the rope and prevent the development of corrosion, but to keep the individual wires and the center well oiled so that friction is kept to a minimum.

A wire rope is a flexible member because the many parts of which it is composed can move with respect to each other as the rope operates around a drum or over a sheave. When this movement can take place with the least amount of friction, internal wear of the component parts and the development of fatigue are reduced to a minimum, and of course, both of these factors enhance the life and safety of the rope.

In some cases where moisture has penetrated to the center of a rope, corrosion may cause considerable damage without being very much in evidence on the surface. Considerable deterioration of the center and the wires on the underside of the strands takes place. Any pronounced reduction in one section which cannot

● Replenishing the original lubricant of wire rope is necessary to protect the rope and prevent the development of corrosion, and to keep the individual wires and center well oiled so that friction is kept to a minimum. Lack of lubrication will corrode a rope like the one shown here.

Even the best wire rope—alone—isn't enough. The buyer of rope for the vital war job of today and the cost-conscious job of tomorrow has a right to all that goes with good rope.



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thoroughly be accounted for, should be regarded with suspicion, and a careful check should be made to determine the cause.

Evidence of Corrosion

Often the only evidence of corrosion is indicated by the great reduction in diameter of one section of the rope in comparison to another section of the same rope, where corrosion had not been involved. Except for careful measurements of the rope, corrosion of this type may be impossible to detect, and it represents a dangerous condition which could have been avoided through a proper lubricating practice.

Lubricants of practically any consistency ranging from fairly thin oils to heavy almost tar-like substances can be obtained suitable for application to wire rope. Whatever material is used, however, must be free from any element which might attack the constituent parts of the rope, and it must be chemically neutral.

Where severe corrosive or wet conditions are encountered, a fairly heavy compound that acts as a protector as well as a lubricant, should be used. To apply this properly, it must be heated so that it will penetrate the strands and reach the center of the rope and so that it will adhere to the surface and protect the rope externally.

Other, somewhat lighter lubricants should be used for average conditions where protection against corrosion is needed but where a material having a little more lubricating value is required. Some lubricants for installations on this class can be applied cold, but most satisfactory results will be obtained if a little heavier material applied in the heated state is used. In this way, better penetration and longer protection to the rope will result.

On still other types of equipment, thinner lubricants that will properly penetrate without being heated, can be employed. Ropes on plant cranes and elevators can generally be treated in this manner, since they are operated indoors where corrosive conditions are seldom encountered.

Inspection in Service

One of the primary reasons wire rope is such a reliable member derives from the fact it can be inspected while it is in service, and the development of wear and broken wires which finally necessitate its replacement, can be watched. There are many ways in which these two factors, that us, abrasion and broken wires, can be measured to judge the condition of the rope, and some inspectors who have been working with wire rope for years, have devised reliable inspection practices of their own.

Such methods generally represent a means for estimating the remaining metallic area or remaining strength of a rope. After this has been done and it has been determined how far the factor of safety has been reduced due to deterioration of the rope, it can be decided whether or not the rope can be operated with safety for a longer period of time.

Important to Understand

On most installations where wire rope is used a considerable amount of damage can result if a rope failure occurs, and on some installations such an accident would result in loss of life. Therefore it is important for those who use wire rope to thoroughly understand it, to handle and install it properly, and while it is in service to give it the care necessary to make sure it wears in a normal manner. When this is done it can be depended upon to give uniform service, to show, through wear and broken wires, what its condition is, and to give ample warning when the point is reached for its removal from service.

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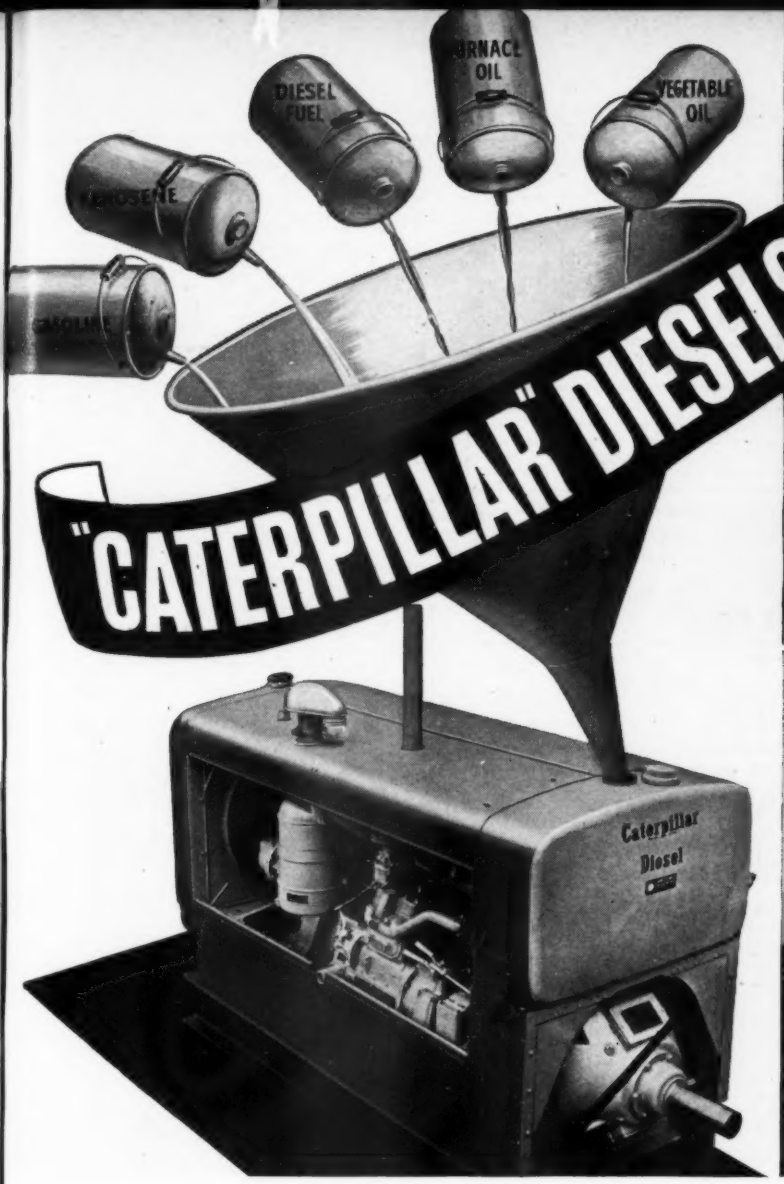
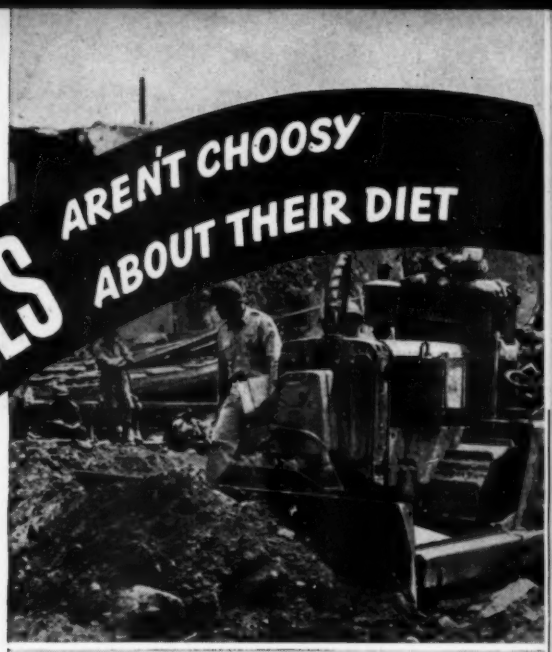


"CATERPILLAR" DIESELS

AREN'T CHOOSY ABOUT THEIR DIET



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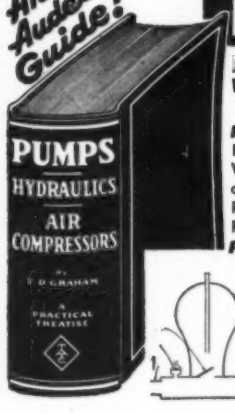

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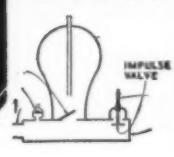

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NEW TRADE LITERATURE

(Continued from page 326)

1020 S. Central Ave., Chicago 44, Ill. (Free)

Title: **"Tools to Build the World of Tomorrow"**

Subject: Deluxe brochure covering history, development, features and specifications of the recently introduced Thor Plastic-Housed Portable Electric Drill. Presents specific facts and advantages of this new tool. Convincingly answers any questions about stamina that may arise.

Where to Get: Independent Pneumatic Tool Co., 600 West Jackson Blvd., Chicago 6, Ill. (Free to executives)

Title: **"Detroit Diesel Fights"**

Subject: The story of a peacetime engine and how it went to war, in picture and text.

Where to Get: Detroit Diesel Engine Division, General Motors Corporation, Detroit, Michigan. (Free)

Title: **"Stainless-Clad Steel"**

Subject: Information on analysis, applications, manufacture, fabrication, styles of heads, standard size of sheets and plates. Of interest to fabricators are sections on deep drawing, grinding, polishing, cleaning, gas-cutting, riveting, soldering, welding, etc.

Where to Get: Jessop Steel Co., Washington, Pa. (Free)

Title: **"Surplus Steel Valves"**

Subject: A catalogue of the 30,690 new surplus steel valves of various sizes and types has been published for the use of war contractors or others by the Surplus Program Section of the WPB Redistribution Division in cooperation with the Metals Reserve Company. It indicates the type of valves, catalogue specifications, manufacturers' names and state location. The list is a 50-page document, including both multi-purpose and specific use valves.

Where to Get: Surplus Program Section of War Production Board, 155 East 44th St., New York, New York. (Free)

Title: **"OPA Directory of Commodities and Services"**

Subject: Up-to-date information about Office of Price Administration regulations and a listing of key persons in operating units of the national OPA office.

The directory was designed to aid industry and the general public in keeping abreast of price regulations and in making ready contact with OPA organizational units that handle each price control program.

Included in the manual are:

(1) Names and telephone numbers of OPA persons responsible for issuance of price regulations, (2) numbers and titles of all formal price regulations effective through December 1, 1943, and the price branches that issued them, (3) an alphabetical index of commodities and services, along with OPA branch and section and the number of the applicable regulation, and (4) a separate alphabetical listing of the products and services assigned to each price branch.

Supplements to be issued will include new price regulations, amendments and revisions to existing regulations and any changes that may occur in OPA organizational structure.

Where to Get: Superintendent of Documents, Government Printing Office, Washington, 25, D. C. ($1.00)

Title: **"Who, What and Why"**

Subject: A descriptive pamphlet which briefly indicates the nature of the services of Foster D. Snell, Inc., consulting chemists, engineers.

Where to Get: Foster D. Snell, Inc., 305 Washington Street, Brooklyn, 1, New York. (Free)

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NEW *Thor* RETAINER

...provides NEW OPERATING SPEED

Fully-enclosed to prevent clogging . . . to function smoothly for the life of the tool, the springs in this new Thor Retainer now give you longer, steady "cushioned" action on operations typical of the above—where the shock of removing the drill from a hole is absorbed.

WITH *Thor* ROCK DRILLS

Thor design scores again with an *exclusive* development to bring you *new operating speed* with Thor Rock Drills.

It is the new Thor "Spring Cushion" Steel Retainer which now *fully encloses* its springs to bring you these new *speed* advantages:

✔ Fully enclosed Thor springs *last longer . . . save you time and maintenance cost,* because they are protected from dirt and other particles to prevent clogging.

✔ Fully enclosed Thor springs *retain longer, steady "cushioning" action* because they are sealed at proper tension inside a steel cap that is part of an inherent retainer design preventing them from being overtightened by the operator or repairman.

✔ Fully enclosed Thor springs *help you work faster . . . longer* because this same principle of *steady tension* makes the spring-attached locking device easier to operate in removing the drill shank from the tool under operation.

For full information about these new, improved Thor Sinker Rock Drills write today for Catalog 42A.

Thor *Portable Pneumatic and Electric Tools*

INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. JACKSON BOULEVARD, CHICAGO, ILL.

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